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Do Highly Educated Immigrants Perform Differently in the Canadian and U.S. Labour Markets?

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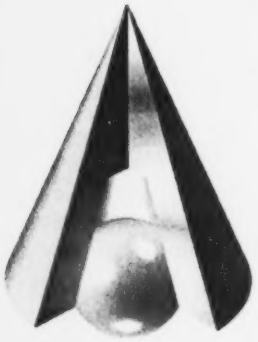

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0^s	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p}	preliminary
^{r}	revised
x	suppressed to meet the confidentiality requirements of the Statistics Act
E	use with caution
F	too unreliable to be published

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Abstract

This paper compares changes in wages of university-educated new immigrant workers in Canada and in the U.S. over the period from 1980 to 2005, relative to those of their domestic-born counterparts and to those of high school graduates (university wage premium). Wages of university-educated new immigrant men declined relative to those of domestic-born university graduates over the entire study period in Canada, but rose between 1990 and 2000 in the U.S. The characteristics of entering immigrants underwent more change in Canada than in the U.S. over the 1980-to-2005 period; as a result, compositional changes in the immigrant population had a larger negative effect on the outcomes of highly educated immigrants in Canada than in the U.S. However, even after accounting for such compositional shifts, most of the discrepancy in relative earnings outcomes between immigrants to Canada and immigrants to the U.S. persisted. The university premium for new immigrants was fairly similar in both countries in 1980, but by 2000 was considerably higher in the U.S. than in Canada, especially for men.

Keywords: immigrants; earnings; university graduate; international comparison

Executive summary

Declining entry earnings of successive cohorts of immigrants to Canada have been well documented in the literature. Few studies, however, analyze cross-cohort patterns for immigrants with specific education levels, particularly university graduates. To the extent that well-educated immigrants are becoming increasingly sought-after by traditional immigrant-receiving countries, their relative (to host country workers) outcomes could influence the choice of host country among individuals considering migration, and therefore the self-selection of individuals who choose to immigrate to Canada in the future.

The goal of this paper is to determine whether highly educated recent immigrants to Canada have fared as well economically as their counterparts entering the U.S., in light of the significant rise in the number of highly educated immigrants entering Canada. This study asks how economic outcomes at entry for the highly skilled have changed in the two countries over the last quarter-century (1980 to 2005). It further asks whether changes in the standard observable background characteristics of entering immigrants can account for the outcome trends documented in this study.

Two economic outcome measures are used: the mean relative (to domestic-born) entry wages of highly educated new immigrants (i.e., the wage gap at entry); and the university wage premium, (defined as the difference between the wages of university-educated and high-school-educated). Both unadjusted and adjusted (controlling for changes in observable characteristics across successive cohorts) estimates of these outcomes are produced.

This study finds that relative entry earnings of university-educated immigrants followed a significantly different path in Canada and the U.S., with generally superior outcomes in the U.S., particularly since 1990. This occurred despite the fact that significant declines in entry earnings for successive groups of entering immigrants *as a whole* (i.e., including immigrants with and without university education) were observed in both countries over the last quarter-century. Overall, the relative wages of university-educated male immigrants in the U.S. demonstrated little long-term decline, while those of university-educated male immigrants in Canada did. The university-educated immigrant *women* in the U.S. experienced a similar trend as the men, as did highly educated immigrant women in Canada.

Changes in the composition of new immigrants with respect to age, language spoken at home, English language ability (English or French in Canada), source country, and region of residence, which tended to be greater in Canada than in the U.S., accounted for most of the observed change in relative earnings of *university-educated* immigrants in Canada during the 1980s, but this was less true for more recent cohorts. Such compositional shifts had a smaller negative effect on aggregate relative earnings of university-educated immigrants in the U.S., where changes in relative immigrant wages were driven to a larger extent by changes *in economic returns* to characteristics over the entire 1980-2005 period. Even after accounting for these compositional changes in both countries, however, most of the gap in outcomes between Canada and the U.S. persisted.

The university wage premium increased marginally among new immigrants in Canada between 1980 and 2000, but fell between 2000 and 2005, especially for men. In the U.S., the university wage premium rose quite rapidly over the 1980-2005 period among both new immigrants and domestic-born workers, both men and women. Overall the adjusted university wage premium was only marginally higher among new immigrants to the U.S. than among new immigrants to Canada in 1980 but, by 2005, was dramatically higher in the U.S.

The objective of this paper is to document relative economic outcomes among highly educated immigrants in the two countries, and ask whether changes in observable characteristics among entering immigrants accounted for changing economic outcomes. But there are many other potential explanations for the different trends in relative earnings of new immigrants to Canada and the U.S. during the 1990s, explanations that are beyond the scope of this paper. This research has shown that differences in occupational composition of immigrants, particularly changes in the share of immigrants trained in the information technology and engineering fields, did not contribute significantly to the different trends in relative earnings of new immigrants over that period. Nor has there been a major shift over time in reliance on an employment-based immigration class, especially in Canada, that could explain the deterioration in relative earnings of new immigrants to Canada. Other possibilities, such as the more rapid increase in the supply of highly educated immigrants in Canada than in the U.S., more pronounced changes in host country language ability in Canada than in the U.S., or perhaps changes in other unobserved characteristics are areas for further research.

1 Introduction

While it is well known that entry earnings have been declining for successive cohorts of entering immigrants, perhaps less well known is the fact that these relative (to domestic-born) declines in entry earnings were larger for university graduates than for high school graduates between the early 1980s and mid-1990s (Green and Worswick 2010). Furthermore, relative and absolute low-income rates have been increasing faster among highly educated immigrants than the less educated (Picot and Hou, 2003). If economic outcomes of highly educated immigrants are poorer in Canada than in other major immigrant receiving countries, this could adversely affect the willingness of highly skilled workers to move to Canada. University-educated immigrants are becoming increasingly important to most immigrant-receiving, developed countries, including Canada. The goal of this study is to compare the labour market performance of university-educated new immigrants (relative to their domestic-born counterparts) in Canada and one of its main competitors for skilled labour, the United States.

Previous comparative studies have analyzed cross-country differences in language fluency, education, and labour market outcomes of immigrants in light of differences in immigration systems. For example, Duleep and Regets (1992) and Borjas (1993) compare Canada and the U.S., and Antecol, Cobb-Clark, Trejo (2003) compare Canada, Australia and the United States. These studies focus on whether an immigration system that selects newcomers based on skills alters the skill composition of immigrants from a given source country. The answer appears to be that immigrants from the same country of origin possess similar skills regardless of their destination, at least among immigrants who arrived before 1990. The study closest in spirit to ours, Antecol, Kuhn, and Trejo (2006), compares the change over time in the gap between the domestic-born and immigrant populations with respect to employment and wages in Canada, Australia, and the U.S. in light of the different labour market institutions in the three countries. Generally speaking, the study finds that new immigrants improve their economic outcomes over time more in terms of wage adjustment in the U.S. than in the other two countries, and more in terms of employment in Australia than in the other two countries, with Canada falling in the middle in both cases.

There is currently little evidence on economic outcomes of university-educated immigrants specifically. The exceptions include Picot and Hou (2003), Green and Worswick (2010), and Frenette and Morissette (2005) for Canada and Borjas and Friedberg (2007) for the U.S. To our knowledge there are no cross-country studies that compare the economic success of university-educated immigrants despite the fact that highly educated immigrants are becoming increasingly important to major immigrant receiving countries. This study fills this gap in the literature by comparing cross-cohort patterns in entry earnings, defined as earnings during the first five years after arrival, of university-educated immigrants in both Canada and the U.S. The analysis covers the period from 1980 to the year for which the most recent data are available, namely, the 2006 Census of Population in Canada and the 2005 American Community Survey in the U.S.

There are a number of reasons why immigrant *entry* earnings are an important metric. First, the significant decline in earnings at entry over the 1980s and early 1990s (likely the major topic addressed in the immigrant economics literature over the last two decades) was followed by a significant change in the characteristics of entering immigrants in Canada, notably an increase in the share with university degrees. It seems reasonable to focus on entry earnings to assess the effects of these changes in immigrant characteristics. Second, recent research on return migration (Aydemir and Robinson 2008) has suggested that the rate of out-migration of immigrants in Canada is large, and occurs primarily during the first couple of years following entry. Hence, economic outcomes during the first few years after migration may be an

important factor in determining the extent to which Canada retains its immigrants. Third, most immigrants who fall into low-income status do so during their first full year in Canada (between 35% and 45% of immigrants are in low-income status during their first year in Canada), and this is followed by fairly high rates (around 20%) of remaining in low-income status for five or more years (Picot, Hou, and Coulombe 2008). Lower entry-level earnings have been followed, by and large, by less favourable economic outcomes during at least the first decade or so.

The goal of this study is to determine whether highly educated new immigrants to Canada have fared as well economically as their counterparts entering the U.S., in light of the significant rise in the number of highly educated immigrants entering Canada. This study asks how economic outcomes at entry for the highly skilled have changed in the two countries over the last quarter-century (1980 to 2005). It further asks whether changes in the standard observable background characteristics of entering immigrants can account for any differences in the outcome trends observed between Canada and the U.S. Two economic outcome measures are used: the mean relative (to domestic-born) entry wages of highly educated new immigrants (i.e., the wage gap at entry) and the university wage premium, defined as the difference between the wages of the university-educated and those of the high-school-educated. Both unadjusted and adjusted (controlling for changes in observable characteristics across successive cohorts) estimates of these outcomes are produced.

This study finds that relative entry earnings of university-educated immigrants followed a significantly different path in Canada and the U.S., with generally superior outcomes in the U.S., particularly since 1990. This occurred despite the fact that significant declines in entry earnings for successive groups of entering immigrants *as a whole* (combining those with and without university education) were observed in both countries over the last quarter-century. Changes in the composition of new immigrants with respect to age, language spoken at home, English language ability (English or French in Canada), source country, and region of residence, which tended to be greater in Canada than in the U.S., accounted for most of the observed change in relative earnings of *university-educated* immigrants in Canada during the 1980s, but this is less true for more recent cohorts. Compositional shifts had a smaller negative effect on aggregate relative earnings of university-educated immigrants in the U.S. The university wage premium increased marginally among new immigrants in Canada between 1980 and 2000, but fell between 2000 and 2005, especially for men. In the U.S., the university wage premium rose quite rapidly over the 1980-2005 period among both new immigrants and domestic-born workers, both men and women.

2 Data and definitions

This paper uses data from the 1981, 1991, 2001, and 2006 censuses of Canada, each representing a 20% sample of the Canadian population. The U.S. data for comparable years come from the Integrated Public Use Microdata Sample (IPUMS) of the 1980, 1990, and 2000 U.S. censuses, each representing a 5% sample of the population, and from the 2005 American Community Survey (ACS), a 1% sample of the population (Ruggles et al. 2008).[1] The sample consists of individuals aged 25 to 54 living in private dwellings and working in civilian

1. The ACS asks the same questions as the decennial census every year to a representative sub-sample of the population.

occupations.[2] The sample excludes individuals with Aboriginal ancestry from the domestic-born sample of both countries.[3]

Immigrants are defined as foreign-born individuals who are not citizens by birth of the host country. The sample excludes temporary residents in Canada because they were not enumerated in the 1981 Census. The immigrant sample is restricted to individuals who arrived at or after the age of 25. This is in order to exclude immigrants who arrived as children or youth, given that their labour market experiences differ markedly from those of individuals who arrived as adults and likely completed all or some of their education before arrival.

The aim is to focus on entry wages of immigrants, i.e., the wages of "recent" or "new" immigrants. To identify immigrants who have lived in the host country for no longer than five years, the question on the year in which a person became a landed immigrant on the Canadian census, and the year in which a person came to live or stay on the U.S. census is used.[4] These questions are traditionally used to estimate the number of years that an immigrant has lived in the host country. They do not capture exactly the same information in both countries, however. The question on the Canadian census refers to a concrete event — the year in which an individual became a landed immigrant. The equivalent event in the U.S. would be the year in which an individual becomes a permanent resident (i.e. obtains what is commonly called a "green card"), but the wording of the question on the U.S. census and ACS appears to be more ambiguous, so that some individuals who have lived in the U.S. before obtaining permanent legal status might report some earlier year as their "year of arrival."[5]

Hence, the "years in Canada (or the U.S.)" variable may not be accurately reported in the two censuses, and not comparably reported between the two countries. This is important because there is a positive correlation between "years in the country" and earnings. It is known that some immigrants live in Canada before becoming landed immigrants. The Canadian census measures "years since becoming a landed immigrant," not "years in Canada." Therefore, "years in Canada" may be underestimated in the Canadian census, and hence earnings at any given number of "years in Canada" (which is really years since becoming a landed immigrant) overestimated in research based on census data (including this study).

The situation with respect to the U.S. census is less clear. Since the U.S. census asks when a person came to live or stay in the U.S., it is not measuring "years since obtaining a green card." Nor is it necessarily measuring "years since first coming to the U.S."; rather, it is likely measuring something in between. Hence, the underestimation of the true "years in the U.S." and the resultant overestimation of earnings at any given number of years in the U.S. (as

2. To reduce data processing time, a 10% random sample of the domestic-born sample is used in all years in both countries, with the exception of the 2005 ACS data for the U.S.
3. This exclusion is to make the domestic-born more comparable between Canada and the U.S. Aboriginal peoples tend to have lower earnings than the remaining domestic-born population, and the population shares of Aboriginal peoples are different in the two countries. About 5.4% of Canada's population reported Aboriginal ancestries in the 2006 Census, while about 0.8% of the U.S. population reported their ancestry as American Indian or Alaska Native in the 2005-2007 ACS.
4. The question on the 1991, 2001, and 2006 Canadian censuses was "In what year did this person first become a landed immigrant?" Additional instructions were included for providing the first time that individuals obtained landed-immigrant status. In 1981, the question was "In what year did you first immigrate to Canada?" In the U.S., the question was "When did this person come to the United States to stay?" in 1980 and 1990, and "When did this person come to live in the United States?" on the 2000 U.S. census and the 2005 ACS, with additional instructions to list the latest year the person came to live/stay or the year the person came to stay permanently.
5. Several studies in the U.S. have shown that a large proportion of immigrants to the U.S. have lived there before obtaining legal immigration status, that many have arrived and left the U.S. multiple times, and that the year of arrival reported in the census does not systematically correspond to either the first or the last time a person entered the U.S. (see for example Lubotsky (2007), Ellis and Wright (1998), Redstone and Massey (2004), and Massey and Malone (2002)).

measured by the U.S. census) may be significantly less than is the case in Canada. The data suggest that this is indeed the case.

Text table 1 in the Appendix shows that 20% of university-educated immigrant men who report their "year of arrival" (i.e., year of becoming a landed immigrant) as 1997 on the 2001 Canadian Census in fact lived in Canada in 1996. In comparison, 10% of university-educated immigrant men who "came to live" in the U.S. in 1996 (as reported in the U.S. census) already lived in the U.S. in 1995. This information is obtained by using the "where did you live 'X' years ago" questions contained in the Canadian and U.S. censuses. A larger proportion of Canadian than American immigrants lived in the country before the immigrant "arrival" date reported in their respective censuses. Further data analysis suggests that it is more common for individuals to live in the host country for one or two years rather than for a longer period of time before the "arrival date" reported on the census (obtaining landed immigrant status in Canada and arriving "to live" in the U.S.), as one would expect. Data from an entirely different data source in Canada produce very similar estimates for that country.[6]

Text table 1 also shows that university-educated immigrants who lived in Canada prior to obtaining landed immigrant status (i.e., before their reported "arrival" date in the census) generally report slightly higher wages during the first five years in Canada on the census than those who did not. In contrast, university-educated immigrants who lived in the U.S. before the "year of arrival" generally report lower wages. Therefore if anything, as a result of the "error" in reporting the true date of arrival, wages of immigrants in Canada during the first five years in Canada are likely overestimated and wages of immigrants in the U.S. underestimated, at least on the basis of evidence in Text table 1 on immigrants who arrived in the 1990s.[7] Hence, the gap in outcomes between Canadian and American highly educated immigrants is likely underestimated, as the research shows that by 2005 outcomes were superior in the U.S. to those in Canada.

The sample of new immigrants consists of individuals who, at the time of the survey, had lived in Canada between 1 and 5 years, while, for the U.S., it is between 0 and 5 years (on the basis of the "year of arrival" reported in the census for both countries). The definitions of new immigrants in Canada and the U.S. for purposes of this study are slightly different because information on year of arrival and immigrant earnings are reported differently in the two

6. Estimates from the combined Longitudinal Administrative Databank (LAD) and the Longitudinal Immigration Database (IMDB) show that about 21% of all immigrants who landed in 1997 had worked or lived in Canada prior to their landing. The corresponding estimate is 25% for the 1998 landing cohort, 20% for the 1999 cohort, and 22% for the 2000 cohort.
7. Lubotsky (2007) compares the difference in log annual earnings between immigrants and U.S.-born individuals of all education levels when the immigrants' year of arrival is measured in different ways. Using a single longitudinal data set, he defines year of arrival by (1) answers to a census-type question, (2) the first year the immigrants' earnings are observed in the longitudinal Social Security data, and (3) the earlier of the two. He finds that when measuring year of arrival by a census-type question, the disadvantage of new immigrants is overestimated by 3.5 to 4.7 percentage points for the 1975-79 arrival cohort, but underestimated by 4.0 to 7.1 percentage points for the 1985-89 arrival cohort.

countries.[8] In Canadian data, there are no earnings reported for immigrants who arrived in the census year (i.e., year 0). In contrast, about half of the immigrant men in the 2000 U.S. census who report having arrived in 2000 report non-zero earnings for the previous calendar year; not all individuals who arrive in the census year will therefore drop out of the sample of workers with positive weekly earnings automatically. On the other hand, in the 1980 and 1990 U.S. censuses, year of arrival information is available in typically 3-to-5-year brackets, and thus it is not possible to identify and exclude those who arrived in the census year. The slight difference in the definition of new immigrants may result in a further underestimating of the relative performance of new immigrants in the U.S. relative to their Canadian counterparts since immigrant wages tend to grow with years since arrival.

The main outcome variable is weekly wages of paid workers. Paid workers are defined as individuals with positive earnings in the reference year who reported working a positive number of weeks in the reference year and who made more income from wages and salaries than from self-employment. Weekly wages reported in this study are in 2000 constant Canadian dollars for Canada and in U.S. constant dollars for the U.S. They are not adjusted for purchasing power parity, and hence their *levels* should not be compared across the two countries.

For comparing relative wages of university-educated immigrants and the university wage premium, i.e., the wage differentials between university and high school graduates, it would be ideal to have education categories that are both consistent across time within each country and fairly comparable between the two countries. This proves to be challenging as a result of differences in the education question contained in the Canadian and U.S. censuses, and a change in the question over time in each country (between 1980 and 1990 in the U.S., and between 2001 and 2006 in Canada). The education classification chosen for this study allows for the most consistency across time and within a country.[9] For each country, four education groups are defined for denoting a person's highest educational attainment: less than high school; high school graduate; some post-secondary; and university graduate.[10] The university

8. The sample of recent immigrants in the U.S. includes individuals who arrived in the following years: 1975 to 1980, 1985 to 1990, 1995 to 2000, and 2000 to 2005. The sample of recent immigrants in Canada includes the following cohorts: 1976 to 1980, 1986 to 1990, 1996 to 2000, and 2001 to 2005. It is typical in the Canadian immigration literature to exclude from analysis immigrants who arrived in the census (or other survey) year *and* immigrants who arrived in the year before, ensuring that all individuals in the sample were in the country for the entire reference year (the calendar year preceding the census year). This is particularly important when the outcome of interest is annual earnings, but perhaps less relevant in case of weekly or hourly earnings. Charts 13-16 in the Appendix show distributions of weekly wages for immigrants who arrived in Canada one, two, and three years prior to the census, respectively. The distributions look fairly similar in the Canadian data, with an obvious improvement in weekly wages for workers who have been in the country longer. Therefore immigrants who arrived one year before the census are retained in the sample in order to keep the sample of recent immigrants as comparable to that of the U.S. sample as possible.
9. There is a major change in how education is measured in the 2006 Census of population of Canada, compared to earlier censuses. This study uses the derived variable for the highest degree, certificate or diploma, available consistently until the 2001 Census and matches it with the corresponding variable on the 2006 Census. As a robustness check for the comparability of the four education groups between the 2006 Census and earlier censuses, a synthetic cohort of domestic-born men was formed between 2001 and 2006, and their distribution was calculated across the individual education categories in the derived education variables for each of the two censuses and the broader education categories created for this study. The cohort is 30 to 39 years old in the 2001 Census and 35 to 44 in the 2006 Census. Results are presented in Text table 2. In the U.S. there is a change in how education is measured between the 1980 and 1990 censuses. The 1980 U.S. census records the highest grade of school or year of college attended or completed by the respondent without specifying whether a credential was obtained or not. The 1990 and later censuses, and the ACS, measure the highest level of educational attainment among those who hold high school diplomas, and the highest school grade completed for those without a high school diploma. Once again a synthetic cohort of domestic-born men was formed between 1980 and 1990 and their distribution calculated across the individual education categories in the census education variables and the broader education categories created. The cohort is 30 to 39 years old in the 1980 Census and 40 to 49 in the 1990 Census. The summary of this exercise is presented in Text Table 3.
10. The exception is the U.S. 1980 data, where the highest grade or post-secondary level *attended*, rather than *completed*, is known.

graduate and high school graduate categories are consistent within each country. The university graduate category is also reasonably comparable between the two countries (although there may be further differences in the relative distribution of undergraduate degrees and graduate degrees for example), but the high school graduate category is not.[11]

3 A profile of new immigrants in Canada and the U.S.

3.1 Socio-demographic characteristics of new immigrants of all education levels

New immigrants to Canada (Table 1) and the U.S. (Table 2) are quite dissimilar. Notably, in recent years, new immigrants to Canada tend to be older, more highly educated, and originate from quite different source regions than their American counterparts. The following observations refer to recent immigrants (in the host country five years or less) aged 25 to 54, with or without earnings in the reference year.

New immigrants in Canada became increasingly older than their U.S. counterparts. The average age of new immigrants remained stable in the U.S. at 36.5 years, but increased in Canada from around 36 to 38. The Canadian points system of immigration assigns the maximum amount of points for age to individuals who are between 21 and 49. It also assigns points for foreign work experience. This may be one reason for the change in the age structure across cohorts of immigrants entering Canada (recall though that the sample of recent immigrants includes only individuals who arrived at age 25 or older). In both countries, the average age of new immigrants is lower than the average age of the domestic-born population. Between 1981 and 2006 the average age of the domestic-born increased similarly in both countries, reaching about 40 years by 2006.

There was also a dramatic increase in the proportion of new immigrants to Canada who held a university degree; this was not the case in the U.S. In 1981, new immigrants in the U.S. had higher university completion rates than new immigrants in Canada; by 2006, the opposite was true. The Canadian government altered its selection system in the earlier 1990s to increase immigrants' educational levels and the share of economic immigrants. The educational level of new immigrants to Canada rose dramatically in the 1990s. Almost 60% of prime-age immigrant men (51% of women) who entered Canada between 2001 and 2005 had a university degree, compared to 35% of immigrant men (36% of women) who entered the U.S. during that period. This stands in stark contrast to the cohort of immigrants from 25 years earlier: 26.2% of immigrant men (16.4% of women) who entered Canada at that time had a university education. In the U.S., there was little change in the share of male immigrants with degrees (although the share of female immigrants who had a degree rose).

11. For example, in Canada the high school graduate category includes individuals with completed trades certificates or diplomas, as well as those who have some but not completed post-secondary education at any level, including university. In the U.S. the high school graduate category includes any post-secondary training below a (two-year) college associate degree, whether completed or not, but excludes individuals who have started but did not complete a college degree (associate degree or higher).

Table 1
Characteristics of Canadian-born individuals and new immigrants in Canada aged 25 to 54

	Men								Women							
	Domestic-born				New immigrants				Domestic-born				New immigrants			
	1981	1991	2001	2006	1981	1991	2001	2006	1981	1991	2001	2006	1981	1991	2001	2006
Mean age (years)	37.2	37.6	39.7	40.3	36.0	36.6	38.2	38.3	37.3	37.5	39.8	40.3	36.3	36.5	37.4	37.4
								percent								
Age group																
25 to 29	24.4	20.1	14.7	14.9	16.9	14.5	9.2	7.6	24.2	20.3	14.4	14.9	17.7	14.9	11.6	11.0
30 to 34	21.1	21.0	15.3	14.5	34.8	30.7	26.2	26.1	21.1	21.3	15.2	14.3	34.6	31.4	28.4	29.1
35 to 39	16.7	18.8	18.5	14.9	21.2	23.9	24.6	26.2	16.3	18.9	18.4	15.0	18.4	23.6	24.2	24.9
40 to 44	13.3	17.0	19.4	18.7	12.8	16.3	19.0	20.0	13.3	16.5	19.6	18.7	11.4	15.9	18.0	17.7
45 to 49	12.3	12.8	17.4	19.6	7.9	9.1	13.5	12.7	12.6	12.8	17.3	19.7	8.5	8.3	11.6	10.9
50 to 54	12.2	10.3	14.7	17.3	6.5	5.6	7.6	7.4	12.5	10.2	15.1	17.4	9.4	6.0	6.2	6.4
Highest completed education																
Less than high school	40.2	30.2	22.8	15.2	26.4	23.7	11.9	6.2	43.4	28.5	19.1	11.3	39.7	27.2	15.8	8.2
High school	34.7	39.3	40.1	42.0	31.4	33.1	20.6	16.7	31.3	37.1	35.0	35.1	28.2	33.0	23.1	18.9
Post-secondary	11.0	14.4	18.8	23.4	16.0	15.1	14.7	17.3	16.5	20.9	26.0	30.2	15.7	18.7	19.4	21.8
University	14.1	16.1	18.3	19.4	26.2	28.2	52.9	59.7	8.8	13.5	19.9	23.4	16.4	21.1	41.7	51.1
Speaking language other than English or French at home	0.6	0.7	2.4	3.0	47.1	69.0	81.5	81.5	0.7	0.7	2.3	3.1	50.6	67.3	82.2	82.5
Source region																
North America	...	...	...	...	6.9	2.4	1.6	1.9	...	...	...	...	7.9	3.5	2.1	2.4
Caribbean	...	...	...	...	6.8	4.5	3.0	2.9	...	...	...	...	7.2	6.0	3.6	3.2
South and Central America	...	...	...	...	6.4	8.8	4.4	7.2	...	...	...	...	6.6	9.2	5.2	7.7
Northern Europe	...	...	...	...	17.3	4.7	2.6	3.0	...	...	...	...	15.0	4.9	2.0	2.1
Western Europe	...	...	...	...	5.7	2.5	3.6	3.4	...	...	...	...	5.6	2.7	3.2	2.7
Southern Europe	...	...	...	...	7.9	5.3	5.3	2.4	...	...	...	...	7.2	4.3	4.8	2.1
Eastern Europe	...	...	...	...	5.7	12.9	10.3	9.9	...	...	...	...	5.5	11.3	11.0	10.8
Africa	...	...	...	...	6.5	8.6	9.6	12.7	...	...	...	...	5.4	5.8	7.4	9.7
South Asia	...	...	...	...	6.2	9.8	18.7	20.3	...	...	...	...	6.9	7.3	15.1	17.8
Southeast Asia	...	...	...	...	14.9	11.2	6.5	7.2	...	...	...	...	15.6	15.7	9.9	10.5
East Asia	...	...	...	...	10.0	19.2	25.1	20.4	...	...	...	...	11.9	21.4	27.9	23.1
West Asia	...	...	...	...	4.4	9.3	8.6	8.0	...	...	...	...	3.6	7.1	7.3	7.2
Oceania and other	...	...	...	...	1.5	0.7	0.6	0.8	...	...	...	...	1.5	0.7	0.5	0.6

Notes: The sample includes individuals aged 25 to 54 living in private households, and excluding military occupations (when such information is available), regardless of labour force status. The domestic-born sample excludes the Aboriginal population. The immigrant sample includes only new immigrants (no more than five years in the country) who were aged 25 or older at arrival.

Sources: Canadian censuses of 1981, 1991, 2001 and 2006 20% files.

Table 2
Characteristics of U.S.-born individuals and new immigrants in the U.S. aged 25 to 54

	Men								Women							
	Domestic-born				New immigrants				Domestic-born				New immigrants			
	1980	1990	2000	2005	1980	1990	2000	2005	1980	1990	2000	2005	1980	1990	2000	2005
Mean age (years)	37.7	37.8	39.6	40.0	36.3	36.1	36.1	36.5	37.8	37.8	39.6	40.0	36.6	36.1	36.5	36.8
								percent								
Age group																
25 to 29	22.8	19.6	14.8	15.2	17.5	18.2	19.0	16.0	22.8	19.8	14.9	15.2	17.1	18.9	18.0	14.6
30 to 34	20.6	20.5	15.8	14.8	33.3	32.4	30.1	31.4	20.4	20.6	15.9	14.8	32.8	32.0	29.2	31.2
35 to 39	16.3	18.9	18.5	16.2	19.4	20.4	21.4	20.9	16.3	18.8	18.5	16.2	19.3	20.1	21.1	20.9
40 to 44	13.6	16.9	19.0	18.2	13.7	13.9	14.1	15.0	13.4	16.6	18.7	18.4	13.5	13.6	14.7	15.8
45 to 49	12.9	13.3	16.9	18.7	9.4	9.0	9.3	10.3	13.0	13.3	17.1	18.5	9.2	8.5	10.2	10.9
50 to 54	13.8	10.8	15.0	16.9	6.7	6.1	6.1	6.5	14.2	11.0	14.9	17.0	8.1	6.8	6.9	6.5
Highest completed education																
Less than high school	21.1	14.5	11.4	9.7	34.6	33.7	33.0	30.4	21.2	13.5	9.8	7.9	41.6	35.5	31.3	25.7
High school	32.4	29.5	29.0	30.9	16.0	16.2	17.0	21.5	40.8	32.6	27.7	27.5	22.7	20.2	19.4	21.8
Post-secondary	22.1	29.0	31.0	30.0	16.4	16.1	13.7	13.1	21.4	30.9	34.2	33.3	16.0	18.3	16.9	16.5
University	24.4	27.1	28.7	29.4	33.0	33.9	36.3	35.0	16.5	23.0	28.4	31.3	19.7	26.0	32.3	36.0
Speaking language other than English at home	5.9	6.2	7.0	7.7	85.1	87.2	87.7	89.5	6.2	6.5	7.4	7.7	84.4	86.9	87.5	89.0
Source region																
North America	...	...	...	...	2.6	2.0	2.6	1.8	...	...	...	...	2.8	2.1	2.8	2.1
Caribbean	...	...	...	...	7.0	7.2	6.9	5.1	...	...	...	...	7.6	7.7	7.8	6.2
South and Central America	...	...	...	...	25.1	32.2	40.6	49.3	...	...	...	...	24.8	30.9	36.6	40.9
Northern Europe	...	...	...	...	4.4	3.9	3.3	2.6	...	...	...	...	4.4	3.5	2.7	2.1
Western Europe	...	...	...	...	2.7	2.5	3.0	2.2	...	...	...	...	3.4	2.9	2.9	2.0
Southern Europe	...	...	...	...	4.5	1.9	1.7	1.3	...	...	...	...	3.8	1.5	1.6	1.2
Eastern Europe	...	...	...	...	6.0	6.2	7.7	5.5	...	...	...	...	6.0	5.8	8.7	7.0
Africa	...	...	...	...	3.9	3.9	5.8	5.9	...	...	...	...	2.1	2.3	5.0	5.5
South Asia	...	...	...	...	5.4	5.6	8.7	8.5	...	...	...	...	4.1	4.1	7.1	7.2
Southeast Asia	...	...	...	...	13.4	9.3	5.6	5.2	...	...	...	...	16.2	13.7	8.4	9.4
East Asia	...	...	...	...	12.8	15.6	10.4	9.1	...	...	...	...	14.4	17.2	12.9	12.7
West Asia	...	...	...	...	6.4	4.4	2.9	2.5	...	...	...	...	4.8	3.7	2.6	2.6
Oceania and other	...	...	...	...	5.8	5.2	0.9	1.0	...	...	...	...	5.6	4.6	1.0	1.1

Notes: The sample includes individuals aged 25 to 54 living in private households, and excluding military occupations (when such information is available), regardless of labour force status. The domestic-born population excludes the Aboriginal population. The immigrant sample includes only new immigrants (no more than five years in the country) who were aged 25 or older at arrival.

Sources: U.S. censuses of 1980, 1990, and 2000 IPUMS 5% files and 2005 American Community Survey IPUMS 1% file.

The source country composition of legal immigrants is also both quite different, and has changed in different ways, in both countries. Over the last two-and-a-half decades, the shift in source regions in Canada was characterized by a decline in the share of immigrants from Europe and the U.S. and a large increase in the share of immigrants from Asia in particular (from where 56% now come). Put differently, new immigrants from developed economies and countries with cultures similar to that of Canada have been replaced by immigrants from developing countries. In the U.S., the shift in source regions was marked by the large increase in the share of immigrants from South and Central America (from which almost half of legal immigrants now come) and a decrease in the share of immigrants from Asia. Changes in source country composition of immigrants have been linked in the literature to the declining entry earnings of successive immigrant cohorts in Canada (e.g., Green and Worswick, 2010; Aydemir and Skuterud 2005).

Differences in source country composition will also contribute to differences in language proficiency of new immigrants in the two countries. Using available data, one can construct a comparable measure of the proportion of people who speak a non-official language at home (i.e., not English in the U.S. and neither English nor French in Canada)[12] for the two countries. That proportion has risen from around 50% among new immigrants to Canada in the late 1970s to just over 80% among new immigrants who have arrived since 2001. This is lower than the proportion in the U.S., which remained above 80% across all cohorts, and was about 89% in 2006.

3.2 Socio-demographic characteristics of university-educated new immigrants aged 25 to 54

The increased focus on attracting university graduates to Canada resulted in a significant rise in the supply of such immigrants to Canada, with a significantly smaller corresponding increase in the U.S., particularly during the 1990s. Between 1991 and 2006, the number of university-educated new immigrants aged 25 to 54 rose from around 84,350 to 298,000 in Canada (a 253% increase), while rising from 531,390 to 1,230,300 in the U.S. (a 132% increase).

In addition, Canada experienced a major shift away from European countries in favour of Asian countries as a source of university-educated immigrants. For example, in 1981 Canada, 39% of new (i.e., entering between 1976 and 1980) university-educated men came from Asia; this figure had increased to 61% by 2006 (Table 3). In contrast, there was essentially no such shift in the U.S. The corresponding shares in the U.S. actually declined marginally, from 52% in 1980 to 50% in 2005. The share of entering male university-educated immigrants from Europe changed little in the U.S., falling from 22% to 18%, while in Canada falling much more from 30% to 18%. Hence, among university-educated new immigrants, there have been much larger changes in both volume and source region distribution in Canada than there have been in the U.S. over the last quarter-century.

12. The question on the U.S. census about the language spoken at home is aimed at identifying individuals who speak a non-English language at home, regardless of whether they also speak English or not. A similar question was constructed from the more general language questions in the Canadian census.

Table 3
Characteristics of university-educated new immigrants

	Canada				United States			
	1981	1991	2001	2006	1980	1990	2000	2005
Men								
Mean age (years)	35.4	37.0	37.8	38.4	35.7	35.9	35.8	36.4
				percent				
Speaking English (or French in Canada)	98.9	98.3	98.5	98.1	88.8	86.5	86.5	84.2
Speaking language other than								
English (or French in Canada) at home	40.4	64.0	84.6	84.8	82.4	85.8	85.5	86.6
Source region								
North America	14.0	4.5	1.6	1.6	3.5	2.8	4.4	3.0
Caribbean	2.3	1.6	1.0	1.4	2.5	2.6	3.3	2.5
South and Central America	4.1	5.9	3.1	5.9	8.7	11.6	13.0	18.3
Northern Europe	15.2	4.5	1.9	2.1	6.8	6.3	6.0	5.0
Western Europe	4.8	2.8	2.7	2.9	4.7	4.9	6.2	4.5
Southern Europe	2.8	1.9	2.8	1.7	2.5	1.7	2.1	2.2
Eastern Europe	7.7	11.2	12.7	11.5	7.6	6.9	8.4	6.3
Africa	8.9	10.6	10.0	11.2	6.7	6.0	7.2	6.8
South Asia	10.9	9.7	19.8	21.7	10.6	10.2	18.4	19.3
Southeast Asia	13.1	9.9	5.7	7.2	12.3	9.4	6.1	7.3
East Asia	10.0	24.9	29.7	24.4	20.7	27.5	19.7	19.3
West Asia	5.0	11.9	8.6	7.8	8.8	6.1	3.8	4.0
Oceania and other	1.3	0.6	0.3	0.4	4.7	4.0	1.2	1.6
Women								
Mean age (years)	34.0	35.7	36.3	36.7	34.5	34.9	35.2	35.6
				percent				
Speaking English (or French in Canada)	98.6	97.8	97.6	97.7	84.0	81.3	80.4	80.1
Speaking language other than								
English (or French in Canada) at home	43.6	62.2	83.6	84.1	85.1	87.9	87.1	88.5
Source region								
North America	19.2	7.6	2.7	2.5	3.1	2.7	4.3	2.9
Caribbean	1.9	1.5	1.1	1.5	3.2	2.7	3.9	2.9
South and Central America	4.2	5.0	3.9	6.8	8.3	12.7	16.2	19.6
Northern Europe	7.6	3.7	1.4	1.8	4.8	4.2	4.2	3.1
Western Europe	5.0	3.4	3.1	2.8	4.7	4.3	4.6	3.6
Southern Europe	2.1	1.4	3.1	1.7	1.8	1.5	2.1	1.7
Eastern Europe	9.5	13.9	15.2	13.8	10.7	7.6	11.0	9.7
Africa	5.6	6.6	6.4	7.5	3.1	3.2	5.2	5.0
South Asia	12.6	8.5	16.3	19.6	9.3	8.4	14.0	14.1
Southeast Asia	18.6	19.3	10.7	11.2	23.1	19.1	10.1	12.8
East Asia	9.5	20.3	29.0	23.9	17.9	25.1	20.3	20.3
West Asia	3.2	8.4	6.7	6.6	5.3	4.6	3.1	3.2
Oceania and other	1.0	0.4	0.3	0.4	4.7	3.8	1.0	1.1

Notes: The sample includes new immigrants aged 25 to 54 (who were aged 25 or older at arrival), living in private households, and excluding military occupations (when such information is available), regardless of labour force status.

Sources: Canadian censuses of 1981, 1991, 2001 and 2006 20% files; U.S. censuses of 1980, 1990, and 2000 IPUMS 5% files and 2005 American Community Survey IPUMS 1% file.

The more dramatic change in source region in Canada is reflected in the change in language spoken at home. The relatively stable source region distribution in the U.S. produced little change in the share of new immigrants speaking a language other than English at home; it remained at a very high mid-80s percent over the entire quarter-century. In Canada, a much smaller share of university-educated new immigrants spoke a language other than English or

French at home in 1981 (around 40%); by 2006 this had risen to around 85%. And since this paper is concerned with the change in labour market outcomes of university-educated new immigrants, this more dramatic change in language profiles in Canada may be significant. Interestingly, the measure of the ability to speak English (English or French in Canada) does not follow the same pattern. This variable probably does not fully capture individual variation in English (English or French) proficiency.[13]

The differences between Canada and the U.S. in the change in the distribution of background characteristics can obviously influence labour market outcomes. This issue is addressed in a later section, following a description of the unadjusted labour market outcomes.

3.3 Labour market outcomes of university-educated new immigrants

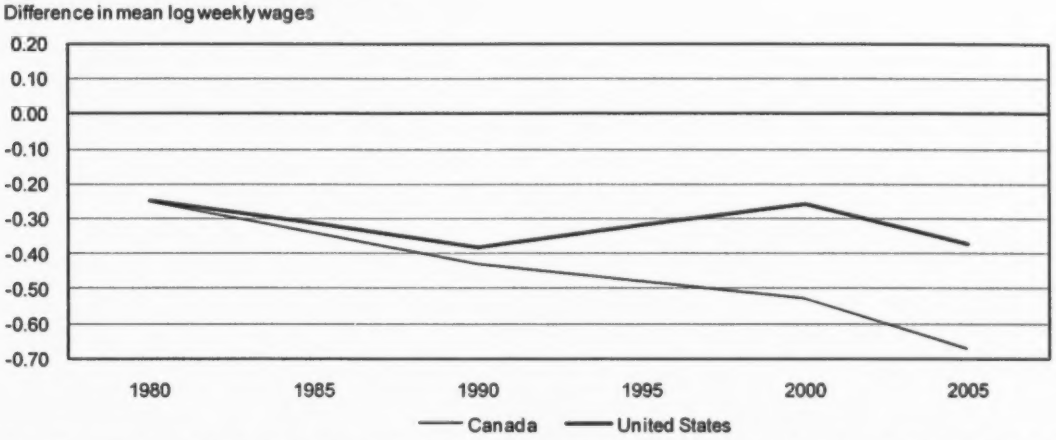
3.3.1 Relative wages

Relative entry earnings of university-educated immigrants have followed significantly different paths in the two countries over the period 1990 to 2005. The unadjusted (i.e., based on raw data) wage gap between university-educated new immigrants and university-educated domestic-born *men* widened much faster in Canada than in the U.S. (Chart 1); this is consistent with findings in Green and Worswick (2010) and Borjas and Friedberg (2007). While relative immigrant entry wages of university graduates were fairly similar among men in Canada and the U.S. in 1980 and 1990, the 1990s brought a dramatic divergence between the two countries. In 1980, the gap was -0.25 log points (i.e., entering immigrants earned roughly 25% less than the domestic-born)[14] in both Canada and the U.S. This gap expanded rapidly to -0.67 log points in Canada by the year 2005. In the U.S., in contrast, the gap grew until 1990 but had returned to the 1980 level by the year 2000. In 2005, it rose again, to roughly the 1990 level.[15]

Immigrant *women* in Canada started out with a considerably larger disadvantage relative to their domestic-born counterparts in 1980, but the size of the gap was comparable to that among men for the remaining years (Chart 2). In the U.S., immigrant women's relative wages did not show as significant an improvement between 1990 and 2000 as they did for men.

13. The measure of English language ability in the U.S. (English or French in Canada) is based on different census questions in Canada and the U.S. In Canada, census respondents were asked whether they can speak English or French well enough to conduct a conversation. In the U.S., respondents reported *how well* they spoke English. English speakers are defined (in the U.S.) as those who reported speaking English well, those who reported speaking English very well, or those who speak only English at home. Non-English speakers are defined as those who reported speaking English not well or not at all.
14. The log point gap, or difference in mean log wages between two groups, can be interpreted as a percentage difference *for small gaps*. The log point gap and percentage difference are virtually the same for log point gaps smaller than 0.1. For larger gaps the approximation is less accurate. For example, the gap of -0.25 log points in mean log wages between university-educated new immigrant and Canadian-born men in 1980 represents a difference of 22.1%, while the gap of -0.67 log points in 2005 represents a difference of 48.8%.
15. Borjas and Friedberg (2007) have pointed out that the ACS data appear to overstate the difference in earnings of immigrant and domestic-born workers relative to census data. Paid workers were found to have lower average weekly wages in the 2000 ACS data than in the 2000 5% census sample, and this is more so for new immigrants than for the domestic-born. If this pattern is in some way related to differences in how or when the census and ACS data are collected, then the gap in wages between university-educated immigrants and university-educated domestic-born workers is overestimated for 2005.

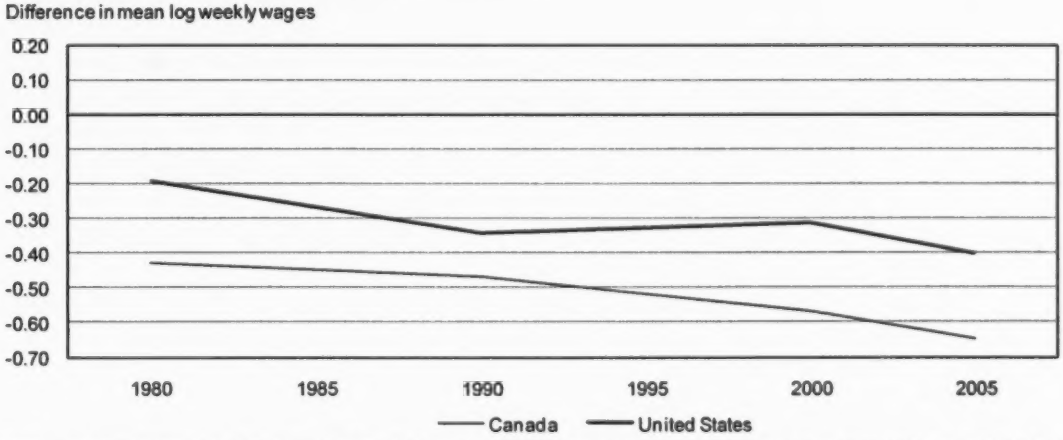
Chart 1
Weekly wages of university-educated new immigrants relative to the domestic born aged 25 to 54 (unadjusted) – Men



Notes: The sample consists of paid workers aged 25 to 54 with positive weekly wages, living in private households, non-Aboriginal and not in military occupations. The immigrant sample includes only new immigrants (no more than 5 years in the country) who were aged 25 or older at arrival. The year on the x-axis corresponds to the reference year for Canada but the census (or ACS) year for the U.S.

Sources: Canadian censuses of 1981, 1991, 2001 and 2006 20% files; U.S. censuses of 1980, 1990, and 2000 IPUMS 5% files and 2005 American Community Survey IPUMS 1% file.

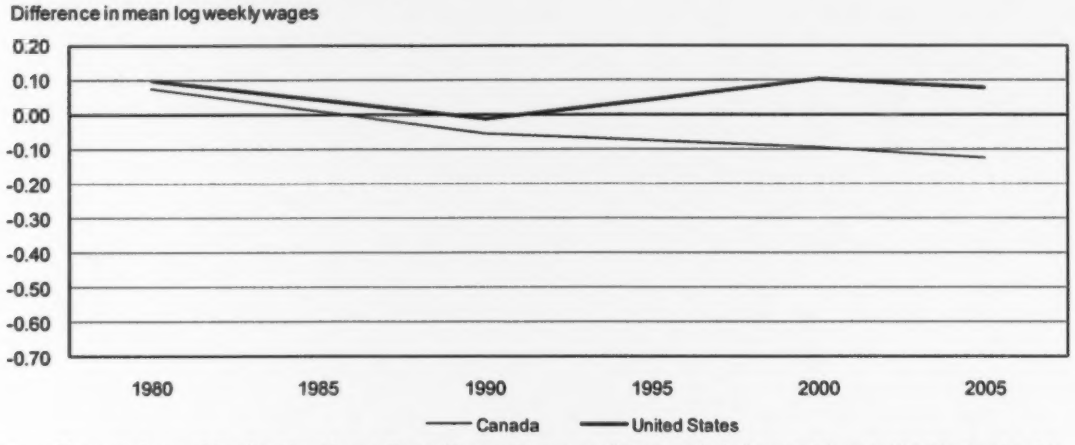
Chart 2
Weekly wages of university-educated new immigrants relative to the domestic born aged 25 to 54 (unadjusted) – Women



Notes: The sample consists of paid workers aged 25 to 54 with positive weekly wages, living in private households, non-Aboriginal and not in military occupations. The immigrant sample includes only new immigrants (no more than 5 years in the country) who were aged 25 or older at arrival. The year on the x-axis corresponds to the census reference year for Canada but the census (or ACS) year for the U.S.

Sources: Canadian censuses of 1981, 1991, 2001 and 2006 20% files; U.S. censuses of 1980, 1990, and 2000 IPUMS 5% files and 2005 American Community Survey IPUMS 1% file.

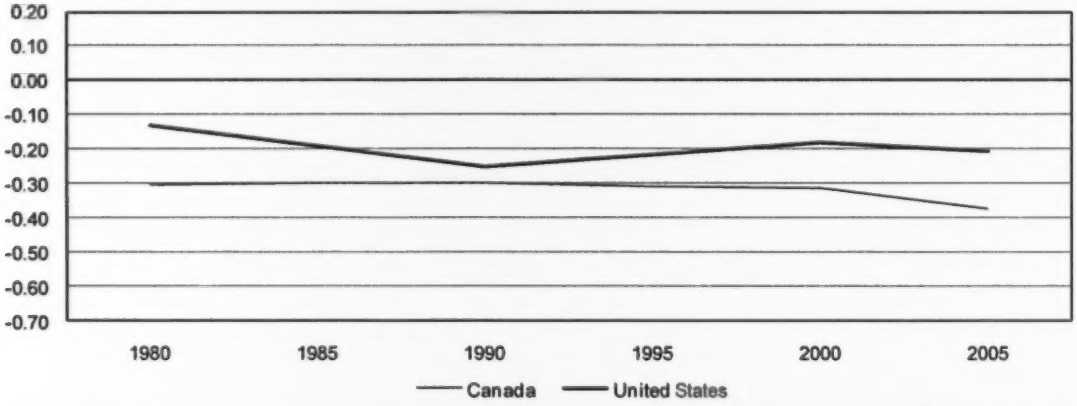
Chart 3
Weekly wages of university-educated new immigrants relative to the domestic born aged 25 to 30 (unadjusted) – Men



Notes: The sample consists of paid workers with positive weekly wages, living in private households, non-Aboriginal and not in military occupations. The domestic born sample consists of workers aged 25 to 30. The immigrant sample consists of workers aged 25 to 54 and includes only new immigrants (no more than 5 years in the country) who were aged 25 or older at arrival. The year on the x-axis corresponds to the census reference year for Canada but the census (or ACS) year for the U.S.

Sources: Canadian censuses of 1981, 1991, 2001 and 2006 20% files; U.S. censuses of 1980, 1990, and 2000 IPUMS 5% files and 2005 American Community Survey IPUMS 1% file.

Chart 4
Weekly wages of university-educated new immigrants relative to the domestic born aged 25 to 30 (unadjusted) – Women



Notes: The sample consists of paid workers with positive weekly wages, living in private households, non-Aboriginal and not in military occupations. The domestic born sample consists of workers aged 25 to 30. The immigrant sample consists of workers aged 25 to 54 and includes only new immigrants (no more than 5 years in the country) who were aged 25 or older at arrival. The year on the x-axis corresponds to the census reference year for Canada but the census (or ACS) year for the U.S.

Sources: Canadian censuses of 1981, 1991, 2001 and 2006 20% files; U.S. censuses of 1980, 1990, and 2000 IPUMS 5% files and 2005 American Community Survey IPUMS 1% file.

Previous studies (Beaudry and Green 2000; Green and Worswick 2010) have found that young, Canadian-born workers have been experiencing declining labour market entry wages over the 1980s and 1990s. If labour market entry wages of domestic-born university-educated workers have followed a different path in Canada than in the U.S., it may be that much of the Canada-U.S. difference in wages observed in Charts 1 and 2 has more to do with conditions for university-educated new labour market entrants in general and not immigrants specifically. In the data used for this study, weekly wages of university-educated domestic-born workers aged 25 to 30 indeed have declined among Canadian-born men but have risen (at least between 1980 and 2000) for American men (results not reported). However, when wages of new immigrants are compared to those of domestic-born new labour market entrants (Charts 3 to 4), a cross-cohort, cross-country pattern resembling that in Charts 1 and 2 results, where domestic-born workers aged 25 to 54 were the comparison group.[16] In Canada, immigrant men (aged 25 to 54) experienced a growing disadvantage in wages relative to 25-to-30-year-old domestic-born university graduates. This was not the case in the U.S. Although labour market conditions for new entrants, whether domestic or foreign-born, may be partly responsible for the different outcomes of new immigrants to Canada and the U.S., this does not appear to be the main story.

The observed pattern in relative wages of university-educated new immigrants could be driven by rising absolute wages of the domestic-born workers and/or falling absolute wages of new immigrants. The nature of these underlying patterns would lead to different interpretations of the observed changes in relative wages of immigrants and the university premium they receive. Charts 5-8 address these questions. The falling relative earnings of university-educated new immigrants in Canada are driven by both *declines* in the absolute wages of successive immigrant cohorts and *increases* (since the 1990s) in the earnings of Canadian-born workers. In the U.S., earnings have been rising for both U.S.-born workers and entering university-educated immigrants between 1990 and 2000, with the latter group experiencing a more rapid increase than the former; this has resulted in rising relative wages over the 1990s.[17]

3.3.2 The university wage premium

The university wage premium, the difference in wages between university graduates and high school graduates, has been rising among the general population in both Canada and the U.S. since the 1980s. In Canada, a recent study shows that the raw university/high school wage differential rose from 1980 to 2005 among men, most in the early 1980s and since 1995. Adjusting for experience, the authors find that the wage premium shows an overall positive trend over the whole period. The adjusted wage premium among women was stable from 1980 to 2000, but increased from 2000 to 2005 (Boudarbat, Lemieux, and Riddell 2010). In the U.S., the university/high school wage premium increased sharply in the 1980s, and continued to increase at a moderate pace in the 1990s for both men and white women (see review by Deere and Vesovic, 2006; and Peracchi 2006). From at least 1990, the university premium has also been higher in the U.S. than Canada. Murphy, Riddell, and Romer (1998) explored this U.S.-Canada difference and concluded that the more rapid increase in the relative supply of the

16. Note that, when 25-to-30-year-old domestic-born workers (university graduates) are the comparison group (rather than 25-to-54-year-olds), the gap in wages between new immigrants and the domestic-born in Canada is much smaller in any given year, and the change in this gap across time is also smaller in magnitude. The difference in relative wages of immigrants between Canada and the U.S. in 2005, for example, falls by one-third, from 30 log points when 25-to-54-year-old domestic-born workers are the reference group to 20 log points when 25-to-30-year- old domestic-born workers are used as a comparison group.
17. Note that the *levels* of wages reported are not adjusted for purchasing power parity (ppp) and thus should not be directly compared across the two countries. However, in the years covered by this study, the ppp varied between 0.79 and 0.85 U.S. dollars per Canadian dollar, so that university-educated immigrants were not just earning less than the Canadian-born; they were also earning less than new immigrants in the U.S., at least from 1990 onwards.

university-educated in Canada was the main determinant of the difference in university wage premium trends between the two countries. In the data, in 1981, some 14% of Canadian-born aged 25 to 30 held a university degree. This share had risen to 27% by 2006. In the U.S., the corresponding numbers were 23% in 1980 and 30% in 2005. The difference between the two countries was even more pronounced among new immigrants aged 25 to 54; the share of university graduates in Canada increased from 25% to 55% between 1981 and 2006 and from 30% to 35% in the U.S.

Even though there were large wage gaps between university-educated new immigrants and the domestic-born in both countries, for most of the last quarter-century, new immigrant and domestic-born *men* have received a similar university premium (a *university premium* is defined as the difference between mean log weekly wages of university and high school graduates).[18] However, new immigrants to Canada and the U.S. experienced opposite trends with respect to the university wage premium (Charts 9-10). Basically, the university wage premium has risen much faster in the U.S. than in Canada over the last quarter-century, for both immigrants and the domestic-born. Furthermore, there was a marked decline in the premium in Canada for immigrants following 2000, which was not observed in the U.S.

More specifically, new immigrants and the domestic-born had very similar wage premiums in Canada in 1980 and 1990, but divergent patterns emerged after 1990. The premium for domestic-born men increased considerably, from 0.29 log points in 1990 to 0.40 in 2000, and remained unchanged in 2006. The immigrant premium essentially stagnated between 1990 and 2000 and dropped from 0.31 log points in 2000 to 0.20 log points in 2005. Picot and Hou (2009) conclude that much of this decline since 2000 is associated with the downturn in the technology sector and with the fact that a very high proportion of entering immigrants were high-tech professionals or engineers.

Among *women,* the university premium is much lower among immigrants than among the domestic-born in both countries (Charts 11-12). This result stems from the much higher wage premium afforded domestic-born women than men in both countries. This same relative gender advantage is not observed among immigrants. The reason for this is unknown.

In the U.S., the unadjusted premium to a university education has been rising from 1980 to 2005 for both immigrant and U.S.-born workers, both men and women, and rising faster than it did in Canada until 2000. For example, among immigrant men the wage premium rose from 0.34 log points (roughly 34%) in 1980 to 0.71 points in 2005.

The university premium could alternatively be defined as the difference in wages between those with a high school diploma and those with a bachelor's degree. This would abstract from any differences in the share of workers with graduate degrees among those with at least one university degree and/or in returns to a graduate degree versus a bachelor's degree, both between immigrants and the domestic-born and between the two countries. The unadjusted premium, therefore, was recalculated restricting the university graduates' sample to those with a bachelor's degree as the highest educational attainment. For men, the premium was lower for both the domestic-born and new immigrants; however, the trend remained essentially unchanged.[19]

18. Note that the educational attainment of individuals classified as high school graduates is somewhat different in Canada and the U.S., as described in Section II, "Data and definitions." As a result, some of the difference in the measured university wage premium between the two countries may be due to differences in how education is measured in each country.
19. Among new immigrants in the U.S., the premium leveled off or decreased slightly between 2000 and 2005.

The large drop in the university wage premium of new immigrant men who arrived in Canada between 2001 and 2005 was due to a larger drop in wages of university-educated immigrants than in those of high school graduates (see Charts 5-8).[20] Earnings of immigrant women in both education groups fell during this period as well, with a larger drop among high school graduates than university graduates. In the U.S., the rising skill premium was driven by rising wages of university graduates. This pattern was true of both U.S.-born and immigrant workers alike until 2000. In 2005, wages of new immigrants in both education groups fell. The patterns were similar for men and women.

The raw data in Charts 5-8 are also consistent with the notion that, at least during the first few years in Canada, entering immigrants are competing to a considerable extent in the same labour market as lower-skilled Canadians. University-educated immigrants in Canada, both men and women, start out with average wages similar to those of domestic-born high school graduates. In the U.S., by contrast, especially since the 1990s, university-educated immigrants have earned wages that have considerably exceeded those of domestic-born high school graduates.

20. Note that Charts 5-8 plot mean wages, while Charts 9-12 plot differences in mean *log* wages.

Chart 5
Average weekly wages for university graduates and high school graduates (unadjusted), men, Canada

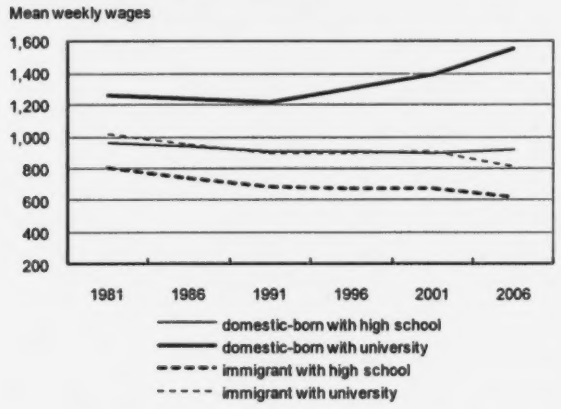


Chart 6
Average weekly wages for university graduates and high school graduates (unadjusted), men, United States

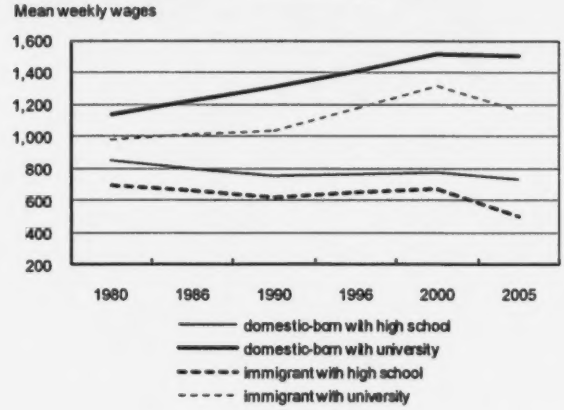


Chart 7
Average weekly wages for university graduates and high school graduates (unadjusted), women, Canada

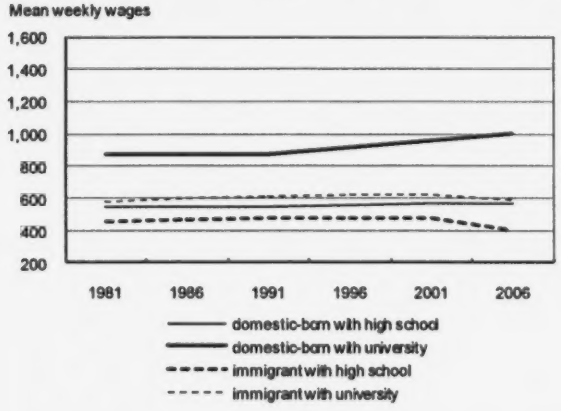
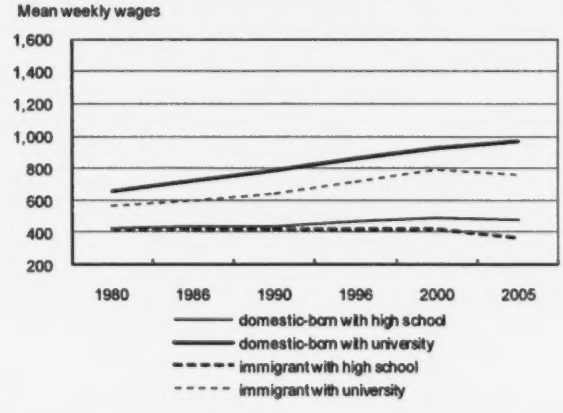


Chart 8
Average weekly wages for university graduates and high school graduates (unadjusted), women, United States



Notes: The sample consists of paid workers aged 25 to 54 with positive weekly wages, living in private households, non-Aboriginal and not in military occupations. The immigrant sample includes only new immigrants (no more than 5 years in the country) who were aged 25 or older at arrival.
Sources: Canadian censuses of 1981, 1991, 2001 and 2006 20% files; US censuses of 1980, 1990, and 2000 IPUMS 5% files and 2005 American Community Survey IPUMS 1% file.

Chart 9
University wage premium (unadjusted), men, Canada

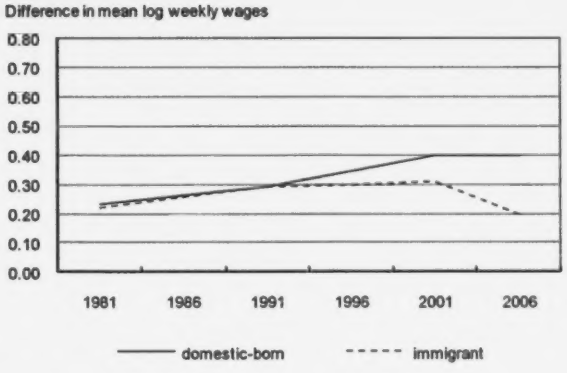


Chart 10
University wage premium (unadjusted), men, United States

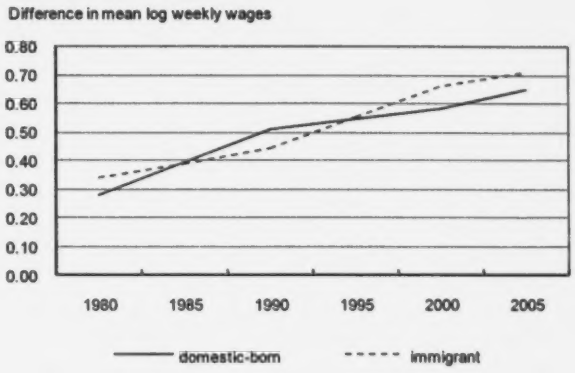


Chart 11
University wage premium (unadjusted), women, Canada

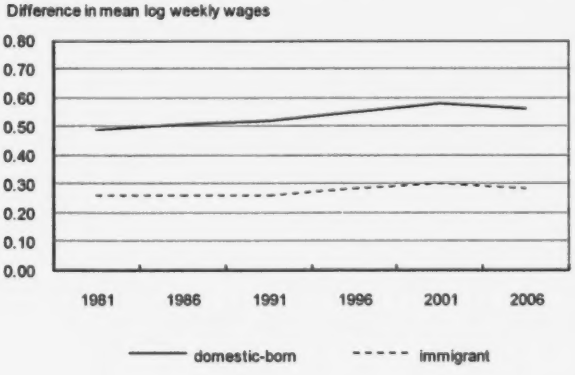
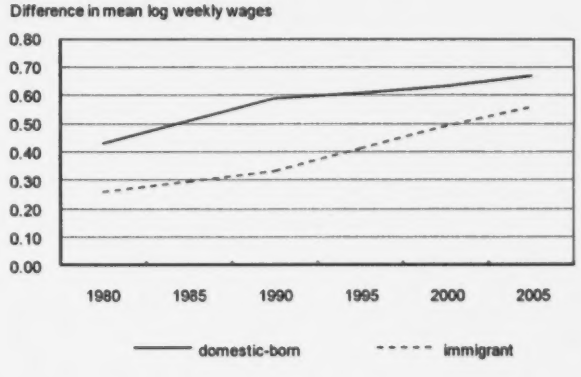


Chart 12
University wage premium (unadjusted), women, United States



Notes: The university wage premium for immigrants is defined as the difference in mean log weekly wages between new immigrants with a university degree and new immigrants with a high school diploma. The premium for domestic-born workers is defined as the difference in mean log weekly wages between domestic-born workers with a university degree and domestic-born workers with a high school diploma. For sample details, see Note to Chart 3.

Sources: Canadian censuses of 1981, 1991, 2001 and 2006 20% files; US censuses of 1980, 1990, and 2000 IPUMS 5% files and 2005 American Community Survey IPUMS 1% file.

4 Do changes in source country composition account for the changing labour market performance of university-educated immigrants?

Existing research on declining entry earnings of immigrants in Canada identifies several determinants. The shift in source country composition away from European countries is an important explanation (Aydemir and Skuterud 2005; Bloom, Grenier, and Gunderson 1995; Picot and Hou 2003). Immigrants from non-European, non-English speaking countries may have difficulties in the Canadian labour market as a result of insufficient host country language skills, the quality of their foreign-acquired education, cultural differences, limited local networks, and potentially discrimination (Bloom, Grenier, and Gunderson 1995; Sweetman 2004). Changing source country composition of successive immigrant flows is also cited as a major contributor to declining immigrant earnings in the U.S. (Borjas 1992). This section examines the extent to which compositional changes account for the Canada-U.S. difference in the trends in relative wages of university-educated new immigrants and the university wage premium.

4.1 Approach

The following model of log weekly wages is estimated on a pooled sample of domestic-born and new immigrant paid workers, separately by gender and country (where the individual-specific index is suppressed for simplicity):

$$Ln(w)_t = \alpha + \sum_{j=1}^{4} \eta_{jt}^{D} S_{jt} + \sum_{j=1}^{4} \eta_{jt}^{I} (S_{jt} * IM) + \delta_t^{D} Age_t + \delta_t^{I} (Age_t * IM) + \delta Age^2 + \beta X + \varepsilon,$$

where the *D* superscripts refer to parameters pertaining to domestic-born workers, the *I* superscripts refers to immigrant workers, the subscript *t* refers to the census year, *IM* is a dummy variable equal to *one* for immigrants and *zero* otherwise, and S_j represents dummy variables for four education groups (less than high school; high school graduate; non-university post-secondary; and university graduate). The slope of the age profiles is allowed to vary by year and immigrant status, but the curvature of the age profile (Age^2) is restricted to be time invariant and common to both groups. The vector *X* includes an indicator for a non-official language being spoken at home, an indicator for whether the respondent speaks English (English or French in Canada), a set of indicators for region of origin, and a set of indicators for region of residence (for Canada, the regions are the provinces and territories, with the Atlantic provinces grouped together and the territories grouped together, excluding Vancouver, Toronto, and Montreal, which are controlled for separately; for the U.S., the regions are the individual states). The estimated coefficients, reported in Appendix Text table 4, are used to obtain adjusted wage gaps between university-educated new immigrants and university-educated domestic-born as well as the university premium for domestic-born and new immigrant workers.

4.2 Adjusted relative wages among the university-educated

The U.S.-Canada divergence in the relative wages of university-educated new immigrants persists after controlling for age, non-official language spoken at home, ability to speak English (English or French in Canada), region of origin, and region of residence (see Table 4). The principal difference between Canada and the U.S. in entry earnings trends occurred during the 1990s — the entry earnings gap (relative to the earnings of the domestic-born) among the university-educated declined in the U.S. over the decade, while rising in Canada. This cross-

country difference is observed both in the raw data and after controlling for changes in characteristics (i.e., the adjusted results).

In 1990, among *men,* the adjusted entry wage gaps were very similar in the two countries. For example, recent immigrant men had adjusted wages 0.44 log points (roughly 44%) lower than the average wage of domestic-born university graduates in Canada and 0.40 log points lower than the average wage of domestic-born university graduates in the U.S. This disadvantage rose to 0.51 log points in 2000 in Canada, but declined to 0.28 log points in the U.S. The entry wage gap rose in both countries between 2000 and 2005, but the difference between countries was very large by 2005, 0.35 log points in the U.S. and 0.63 log points in Canada. Over the entire quarter-century, the adjusted wage gap between university-educated new immigrant and domestic-born men in the U.S. barely changed, moving from -0.32 log points in 1980 to -0.35 in 2005. In contrast, the corresponding gap expanded from -0.37 to -0.63 log points in Canada.

Among university-educated *female* workers in Canada, the adjusted wage gap between new immigrants and the domestic-born was consistently higher than among men and increased between 1990 and 2005.[21] In the U.S., the adjusted gap among women fluctuated over time in a way similar to that for men, but the gap has been larger among women than among men since 1990, as in Canada.

While changes in characteristics account for much of the change in relative wages of university-educated immigrants in Canada between 1980 and 1990, they explain far less of the change in later periods in Canada and over the entire period in the U.S. The findings are qualitatively similar for men and women. For the sake of brevity, the discussion that follows focuses on men, though the trends also apply to immigrant women.

Between 1980 and 2005, the change in the composition of entering highly skilled male immigrants resulted in a 0.16 log point (roughly 16 percentage points) decline in relative wages, whereas, in the U.S., it resulted in only a 0.09 log point decline. This is not surprising, since the composition of immigrants by source region and language changed much more in Canada than in the U.S. This larger effect in Canada was concentrated in the 1980s. Among men, nearly two-thirds of the decline in relative wages of university-educated new immigrants in Canada between 1980 and 1990 can be attributed to changes in characteristics (0.11 of the 0.18 log points decline in relative earnings; see Table 4). The effect was much smaller in the 1990s and early 2000s. Nonetheless, even after accounting for the greater negative effect of compositional changes on relative earnings in Canada than in the U.S., the poorer outcomes in Canada persist. After controlling for compositional shifts, relative earnings fell 0.26 log points (roughly 26 percentage points) in Canada between 1980 and 2005, and only 0.03 log points in the U.S. Clearly factors other than compositional shifts played a role in the increased gap. Section VI returns to this point.

21. This study does not make any attempts to correct for the self-selection of women into the labour force.

Table 4
Adjusted and unadjusted log weekly wages of university-educated new immigrants relative to the domestic-born

	Canada					United States				
	Unadjusted difference	Adjusted difference	Change in unadjusted difference	Change in adjusted difference	Difference explained by observable characteristics	Unadjusted difference	Adjusted difference	Change in unadjusted difference	Change in adjusted difference	Difference explained by observable characteristics
	relative earnings									
Men										
1980	-0.25	-0.37	...	...	...	-0.25	-0.32	...	...	...
1990	-0.43	-0.44	-0.18	-0.07	-0.11	-0.38	-0.40	-0.13	-0.08	-0.05
2000	-0.53	-0.51	-0.10	-0.07	-0.03	-0.26	-0.28	0.12	0.12	0.00
2005	-0.67	-0.63	-0.14	-0.12	-0.02	-0.37	-0.35	-0.11	-0.07	-0.04
Change 1980 to 2005	...	...	-0.42	-0.26	-0.16	...	...	-0.12	-0.03	-0.09
Women										
1980	-0.43	-0.50	...	...	...	-0.19	-0.29	...	...	...
1990	-0.47	-0.52	-0.04	-0.02	-0.02	-0.34	-0.42	-0.15	-0.13	-0.02
2000	-0.57	-0.60	-0.10	-0.08	-0.02	-0.31	-0.37	0.03	0.05	-0.02
2005	-0.65	-0.66	-0.08	-0.06	-0.02	-0.40	-0.44	-0.09	-0.07	-0.02
Change 1980 to 2005	...	...	-0.22	-0.16	-0.06	...	...	-0.21	-0.15	-0.06

Notes: The sample consists of paid workers aged 25 to 54 with positive weekly wages, living in private households, non-Aboriginal and not in military occupations. The immigrant sample includes only new immigrants (no more than five years in the country) who were aged 25 or older at arrival. The adjusted results are evaluated for a 40-year-old who speaks English (English or French in Canada), does not speak a language other than English (English or French in Canada) at home, and lives in Toronto, Ontario (Canada) or California (U.S.). The year corresponds to the census reference year for Canada and census (or ACS) year for the U.S.

Sources: Canadian censuses of 1981, 1991, 2001 and 2006 20% files; U.S. censuses of 1980, 1990, and 2000 IPUMS 5% files and 2005 American Community Survey IPUMS 1% file.

As noted earlier, the rise in the entry wage gap has been much more prominent among the university-educated than the less educated in both Canada and the U.S., especially in Canada. This is particularly true after controlling for changes in observable characteristics (Table 5). In fact, after conditioning on standard socio-demographic characteristics, the relative wages of high-school-educated immigrant men do not exhibit much long-term decline, although there is some decline in relative wages of immigrant women.

Two additional issues were considered. First, the sample was restricted to residents of metropolitan areas, where the majority of immigrants are located. While the gap in wages between immigrants and domestic-born workers is somewhat larger in cities, the *trends* are basically the same, in both Canada and the U.S.[22] Second, immigrants were separated into those originating from traditional and non-traditional source countries; the difference in trends in relative immigrant wages between Canada and the U.S. was observed for both types of immigrants.[23]

4.3 Adjusted university wage premium

There are two major observations regarding the university wage premium. First, even though university-educated immigrants earn significantly less than their domestic-born counterparts for the first many years in the host country, for most of the last quarter-century, new immigrant and domestic-born *men* have had a similar university premium, i.e., the difference in earnings between university graduates and high school graduates (Table 6). Over the entire period, there was an economic advantage to having a university degree (on average), and this relative advantage was similar for immigrants and domestic-born men, at least until post-2000 in Canada, when it fell significantly among immigrant men. Among *women*, the striking fact is that the domestic-born have a much higher premium than their immigrant counterparts.

Second, the premium has risen much faster in the U.S. than in Canada, for both immigrants and the domestic-born. The university wage premium was not that different between the two countries in 1980 (although marginally higher in the U.S. for males). By 2005, however, the university wage premium was 0.40 log points (roughly 40 percent, see footnote 14) in Canada compared to 0.65 log points in the U.S. among domestic-born men, and 0.20 log points in Canada compared to 0.71 log points in the U.S. among new immigrants. The differences were in the same direction for women, but smaller.

Adjusting for standard socio-demographic characteristics did not affect the patterns or the magnitude of the university premium for immigrants in Canada. It did, however, account for some of the rise in the immigrant university premium in the U.S. in more recent years.

The university premium for new immigrant men in Canada rose slowly until 2000, following which it fell significantly. Immigrant men who arrived in the early 2000s, however, faced the lowest university premium over the study period, at 0.19 log points. In the U.S., in contrast, the premium for immigrants continued to rise, reaching around 0.49 log points in 2005.

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22. The unadjusted wage gap between university-educated new immigrant and domestic-born workers is between 0.01 and 0.05 log points higher when only residents of Census Metropolitan Areas (metropolitan areas in the U.S.) are considered. To the extent that immigrants are not distributed across host countries proportionally to the domestic population, their settlement choice is likely endogenous. This study is ultimately concerned about studying the country-level differences in relative wages of immigrants in Canada and in the U.S.
23. Among men, the unadjusted wage gaps show that the disadvantage in wages of university-educated new immigrants from non-traditional source regions is more than two times as large as that for immigrants from traditional countries (North America, Oceania, Northwest Europe) in Canada. In the U.S., immigrant men from traditional source countries earned (on average) more than the U.S.-born in three of the four years in the study, while the disadvantage was restricted to immigrants from non-traditional source countries.

Table 5
Adjusted and unadjusted log weekly wages of high-school-educated new immigrants relative to the domestic-born

	Canada					United States				
	Unadjusted difference	Adjusted difference	Change in unadjusted difference	Change in adjusted difference	Difference explained by observable characteristics	Unadjusted difference	Adjusted difference	Change in unadjusted difference	Change in adjusted difference	Difference explained by observable characteristics
	relative earnings									
Men										
1980	-0.23	-0.38	...	...	...	-0.31	-0.31	...	...	...
1990	-0.43	-0.46	-0.20	-0.08	-0.12	-0.31	-0.26	0.00	0.05	-0.05
2000	-0.44	-0.45	-0.01	0.01	-0.02	-0.34	-0.19	-0.03	0.07	-0.10
2005	-0.47	-0.43	-0.03	0.02	-0.05	-0.43	-0.22	-0.09	-0.03	-0.06
Change 1980 to 2005	...	...	-0.24	-0.05	-0.19	...	...	-0.12	0.09	-0.21
Women										
1980	-0.20	-0.28	...	...	...	-0.02	-0.10	...	...	...
1990	-0.20	-0.27	0.00	0.01	-0.01	-0.07	-0.11	-0.05	-0.01	-0.04
2000	-0.29	-0.32	-0.09	-0.05	-0.04	-0.18	-0.15	-0.11	-0.04	-0.07
2005	-0.37	-0.35	-0.17	-0.07	-0.10	-0.29	-0.23	-0.27	-0.13	-0.14
Change 1980 to 2005	...	...	-0.17	-0.07	-0.10	...	...	-0.27	-0.13	-0.14

Notes: The sample consists of paid workers aged 25 to 54 with positive weekly wages, living in private households, non-Aboriginal and not in military occupations. The immigrant sample includes only new immigrants (no more than five years in the country) who were aged 25 or older at arrival. The adjusted results are evaluated for a 40-year-old who speaks English (English or French in Canada), does not speak a language other than English (English or French in Canada) at home, and lives in Toronto, Ontario (Canada) or California (U.S.). The year corresponds to the census reference year for Canada and census (or ACS) year for the U.S.

Sources: Canadian censuses of 1981, 1991, 2001 and 2006 20% files; U.S. censuses of 1980, 1990, and 2000 IPUMS 5% files and 2005 American Community Survey IPUMS 1% file.

Table 6
Adjusted and unadjusted university wage premium

	Canada				United States			
	Domestic-born		New immigrants		Domestic-born		New immigrants	
	Unadjusted difference	Adjusted difference	Unadjusted difference	Adjusted difference	Unadjusted difference	Adjusted difference	Unadjusted difference	Adjusted difference
	wage premium							
Men								
1980	0.23	0.21	0.22	0.22	0.28	0.27	0.34	0.27
1990	0.29	0.26	0.29	0.28	0.51	0.46	0.44	0.31
2000	0.40	0.39	0.31	0.33	0.58	0.56	0.66	0.47
2005	0.40	0.40	0.20	0.19	0.65	0.63	0.71	0.49
Women								
1980	0.49	0.46	0.26	0.24	0.43	0.42	0.26	0.23
1990	0.52	0.49	0.26	0.24	0.59	0.58	0.33	0.27
2000	0.58	0.58	0.30	0.29	0.63	0.62	0.49	0.40
2005	0.56	0.58	0.28	0.27	0.67	0.66	0.56	0.45

Notes: The sample consists of paid workers aged 25 to 54 with positive weekly wages, living in private households, non-Aboriginal and not in military occupations. The immigrant sample includes only new immigrants (no more than five years in the country) who were aged 25 or older at arrival. The adjusted results are evaluated for a 40-year-old who speaks English (English or French in Canada), does not speak a language other than English (English or French in Canada) at home, and lives in Toronto, Ontario (Canada) or California (U.S.). The year corresponds to the census reference year for Canada and census (or ACS) year for the U.S.

Sources: Canadian censuses of 1981, 1991, 2001 and 2006 20% files; U.S. censuses of 1980, 1990, and 2000 IPUMS 5% files and 2005 American Community Survey IPUMS 1% file.

5 Outcomes after 11 to 15 years in host country

Thus far, this study has focused on immigrant *entry* earnings for reasons described at the start. The larger relative (to domestic-born) economic disadvantage faced by immigrants in Canada shortly after arrival warrants less concern if these same immigrants catch up to their domestic-born counterparts relatively quickly. This section presents the wage gap for *synthetic cohorts*[24] of university-educated immigrants at entry and again ten years later (i.e., 1 to 5 years after arrival and 11 to 15 years after arrival).[25] These results are meant to provide a general idea of differences in earnings trajectories between Canada and the U.S.

24. To create the synthetic cohorts, labour market outcomes of immigrants aged 25 to 44 who have lived in the host country for no more than five years are compared to the outcomes of domestic-born individuals aged 25 to 44, and ten years later the outcomes of immigrants aged 35 to 54 who have lived in the country for 11 to 15 years are compared to those of domestic-born individuals aged 35 to 54. The age bracket is reduced from 25-54 to 25-44 so as to exclude individuals close to retirement age. Any differences in the labour market status and outcomes of individuals aged 55 to 64 between immigrants and the domestic-born could confound the trends this study is interested in highlighting. There are several difficulties in 'following' a synthetic cohort of individuals across cross-sectional data sets. This study focuses only on individuals with a university education. Although by age 25 most individuals who are likely to pursue a university education will have completed their first degree, some may still have been missed. The sample focuses on individuals who worked at some point in the reference year and for whom paid employment was the major source of income. It is possible that some individuals might move between paid employment and self-employment between the two cross-sections and that individuals not included in the sample of workers in the first cross-section would be part of the sample in the second cross-section. This may be particularly true of immigrant women, whose participation rates are rather low in the first five years after arrival.

25. Note also that at 11 to 15 years since migration, a cohort covers five years of arrival in both Canada and the U.S., unlike the recent immigrant definition, where a cohort in the U.S. includes individuals who arrived in the census year (hence covering more than five full years).

The decline in immigrant entry earnings is accompanied by a decline in relative (to domestic-born) earnings for successive cohorts after 11 to 15 years (Table 7). This is true for both countries. However, just as the entry earnings gap among the university-educated (both adjusted and unadjusted) is higher in Canada than in the U.S., so too is the earnings gap after 11 to 15 years in the country, at least for the unadjusted gap (results for the adjusted gap were not produced). For example, in Canada, after 11 to 15 years in the host country, the late 1960s cohort of immigrants earned nearly 90% of what their domestic-born counterparts made; this figure fell to 75% for the late 1980s cohort and 70% for the early 1990s cohort. In the U.S., the comparable percentages were 101%, 84%, and 88%. A similar pattern is observed among immigrant women in both countries. The larger relative economic disadvantage (relative to the domestic-born) faced by university-educated immigrants to Canada than the U.S. does not disappear after 11 to 15 years in the host country.

Table 7
Average weekly wages of paid workers by cohort – university graduates

	Men				Women			
	Canada		United States		Canada		United States	
	0 to 5 years since migration	11 to 15 years since migration	0 to 5 years since migration	11 to 15 years since migration	0 to 5 years since migration	11 to 15 years since migration	0 to 5 years since migration	11 to 15 years since migration
Immigrant arrival cohort								
1966 to 1970								
Domestic-born ($)	...	1,593	...	1,382	...	1,029	...	713
Immigrant ($)	...	1,410	...	1,400	...	918	...	777
Ratio	...	0.89	...	1.01	...	0.89	...	1.09
1976 to 1980								
Domestic-born ($)	1,153	1,411	1,049	1,499	858	969	637	842
Immigrant ($)	980	1,317	941	1,436	583	858	563	844
Ratio	0.85	0.93	0.90	0.96	0.68	0.89	0.88	1.00
1986 to 1990								
Domestic-born ($)	1,129	1,605	1,196	1,705	850	1,068	771	1,003
Immigrant ($)	877	1,204	987	1,430	621	832	645	936
Ratio	0.78	0.75	0.83	0.84	0.73	0.78	0.84	0.93
1991 to 1995								
Domestic-born ($)	...	1,852	...	1,697	...	1,138	...	1,059
Immigrant ($)	...	1,293	...	1,500	...	869	...	978
Ratio	...	0.70	...	0.88	...	0.76	...	0.92
1996 to 2000								
Domestic-born ($)	1,290	...	1,385	...	904	...	895	...
Immigrant ($)	903	...	1,295	...	630	...	784	...
Ratio	0.70	...	0.94	...	0.70	...	0.88	...
2001 to 2005								
Domestic-born ($)	1,358	...	1,371	...	932	...	912	...
Immigrant ($)	787	...	1,122	...	596	...	777	...
Ratio	0.58	...	0.82	...	0.64	...	0.85	...

Notes: "Cohort" refers to synthetic cohort. Both immigrants and the domestic born in the "0 to 5 " columns are aged 35 to 44, and in the "11 to 15" they are 45 to 54. Wages are in $2000 constant Canadian dollars for Canada, and U.S. constant dollars for the U.S. They are not ppp-adjusted and hence their levels should not be compared across the two countries.

Sources: Canadian censuses of 1981, 1991, 2001 and 2006 20% files; U.S. censuses of 1980, 1990, and 2000 IPUMS 5% files and 2005 American Community Survey IPUMS 1% file.

6 Why did the wage gap between immigrants and the domestic-born increase in Canada and fall in the U.S. over the 1990s?

During the 1990s, the wage gap between immigrants and the domestic-born fell among highly educated entering immigrants in the U.S., but rose in Canada. Little of this divergence was associated with differential trends in the composition of entering immigrants, as demonstrated earlier. This is a significant puzzle.

First, one must ask what brought about the improvement in earnings among highly educated entering immigrants in the United States. Borjas and Friedberg (2007) suggest that the improvement may have been related to shifts in the immigration category used and employment in the IT sector. They conclude that the bulk of the improvement in relative entry wages was concentrated among those employed in computer and engineering occupations, i.e. in jobs associated with the high-tech boom. They speculate that the improvement may have been linked to increased use of the H-1B temporary work visa, which brings immigrants into pre-arranged jobs in "specialty occupations."[26]

However, similar trends were occurring in Canada. The number of entering immigrants in IT and engineering occupations increased dramatically during the 1990s (Picot and Hou 2009), and, among this particular group, the relative (to domestic-born) wage gap was also reduced over the decade (Hou 2010), as in the U.S. Hence, differences in outcomes among IT and engineering workers between the two countries is likely not the major explanation, even though within each country it is an important phenomenon. To test this, IT workers and engineers were excluded from the samples, and the Canada-U.S. results changed little (results not reported).

The U.S. does use pre-arranged employment among immigrants (as opposed to temporary workers) more so than does Canada. About 12% of *all* legal immigrants (including children and spouses) entered the U.S. under a class with pre-arranged employment between 1995 and 2000 (U.S. Department of Homeland Security 2006). This group is much skewed towards the highly educated, so that a significant proportion of university-educated immigrants may enter under this category. This approach was used much less in Canada during the 1990s. However, the main concern lies in the *change* in outcomes over the 1990s, and hence there would have to have been a significant change in the relative use of employer-sponsored entry (which provides better initial labour market outcomes) between the two countries, and there is little evidence of that (aside from the H-1B temporary visa mentioned above).

7 Conclusion

Many immigrant receiving countries, including Canada, the U.S., Australia, New Zealand, and the U.K., are seeking and receiving highly educated immigrants. Canada has done very well in attracting such immigrants, and continues to do so under its "human capital" approach to immigrant selection. By the late 1990s, new immigrants to Canada were much more highly educated and came from very different source regions than their counterparts in the U.S. The pool of university-educated "new" immigrants has undergone considerable change over the last quarter-century in Canada. The share of total immigration that university-educated "new" immigrants comprise rose, and the supply increased significantly, particularly during the 1990s.

26. Although these individuals arrive as temporary workers, they would still be captured in the U.S. sample of immigrants in this study.

The source region distribution was altered, away from Europe towards Asia. The share with a home language other than English or French rose dramatically.

The pool of university-educated "new" immigrants to the U.S., on the other hand, was marked by much more stability. Their share of total immigration changed little over time, the supply rose less sharply than it did in Canada, the source region distribution changed little, and the share with a home language other than English was also little changed (although it remained at very high levels).

Relative entry wages of the highly educated "new" immigrants have taken very different paths in the two countries over the last quarter-century and have generally been superior in the U.S. This was particularly evident during the 1990s, when the earnings gap at entry among the university-educated rose sharply in Canada, while falling in the U.S. The adjusted (controlling for standard background observable characteristics) entry earnings gap was very similar in the two countries in 1990, but, by 2005, was 0.35 log points (roughly 35%) in the U.S., compared to a much larger 0.63 log points in Canada. These general trends were evident in both the raw data and the adjusted results.

Changing background characteristics (age, source region, language spoken at home) had a smaller negative effect on relative earnings in the U.S. than in Canada. This is not surprising, given the relative stability of the characteristics distributions in that country. In Canada, changing characteristics accounted for a successively smaller share of the rise in the entry earnings gap as one moves from 1980 to 2005, accounting for little among the entering cohort of the early 2000s. This too is not surprising, since the changes in the source region and language distributions among the highly educated were less significant in the later periods.

Although wages during the first five years in the host country are much lower among university-educated "new" immigrants than among their domestic-born counterparts, the relative economic advantage of having a degree (compared to the high school educated) has remained very similar for immigrants and domestic-born (among males), in both countries. This held true until the early 2000s in Canada, when the university wage premium fell sharply among immigrant males. But, again, the trends in the university wage premium were very different in the two countries. Generally speaking, the university wage premium has increased much more in the U.S. than in Canada, for both domestic-born and "new" immigrants. For the population as a whole, these trend differences were noted in earlier studies and have been attributed to the more rapidly increasing supply of university graduates in Canada than the U.S. (see Murphy, Riddell, and Romer 1998).

Our focus, however, is on new immigrants. Among this group, the adjusted wage premium was not that dissimilar between the two countries in 1980 (identical for women, 30% higher for men in the U.S.). However, by 2000, the premium was dramatically higher in the U.S. than in Canada, 160% higher among males and 70% higher among females.

The reasons for this divergent path between the two countries in the economic outcomes of the highly educated new immigrants are not known, and are beyond the scope of this paper. This study does show that controlling for the standard observable background characteristics accounted for only part of the difference; the increasing gap in outcomes between the two countries persisted (although at a reduced level) after accounting for compositional shifts over the 25 years. Different levels of economic success of immigrants trained in information technology and engineering fields does not appear to contribute much to explaining the Canada-U.S. difference in *trends* in relative earnings of new immigrants, and neither does the different degree to which the two countries rely on employment-based immigration categories. There are a host of other possibilities that are potential topics for future research, including:

- The more rapid increase in the supply of the highly educated new immigrants in Canada than in the U.S. Over the 1990s, the share of new, adult immigrants who held a university degree jumped from around 25% to 47% in Canada, but only from 30% to 34% in the U.S.

- The more pronounced change in language ability (which is not well controlled for in this and most other studies) in Canada as compared to the U.S., associated with the greater shift towards non-traditional source regions in Canada;

- Changes in unobserved characteristics among entering immigrants in the two countries, such as the possibility that the more able university-educated new immigrants increasingly chose the U.S. over Canada. This seems possible, given the relative (to the U.S.) decline in economic outcomes in Canada, and the more rapid increase in the supply of highly educated immigrants;

- Possible declines in the quality of the degrees held by entering immigrants, which may be more pronounced in Canada than in the U.S., again in light of the rapid increase in the supply and the more pronounced shift towards "non-traditional" source regions in Canada;

- Differences in the occupational mix among the highly educated in the two countries, and its relationship to the occupational demand for labour.

The sorting out of the causes of the different economic paths for new immigrants in Canada and the U.S. will be left to future research.

Appendix 1

Chart 13
Distribution of log wages of immigrant men in Canada by years since arrival, 1981

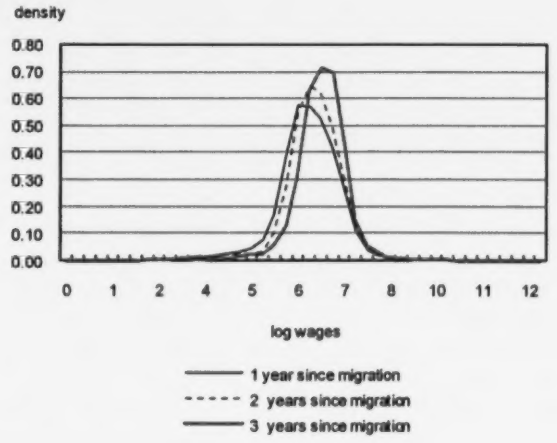


Chart 14
Distribution of log wages of immigrant men in Canada by years since arrival, 1991

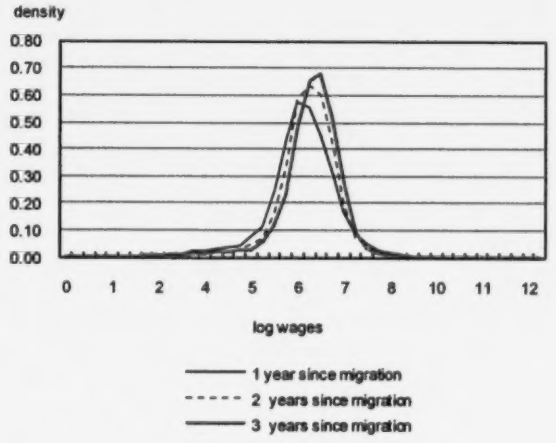


Chart 15
Distribution of log wages of immigrant men in Canada by years since arrival, 2001

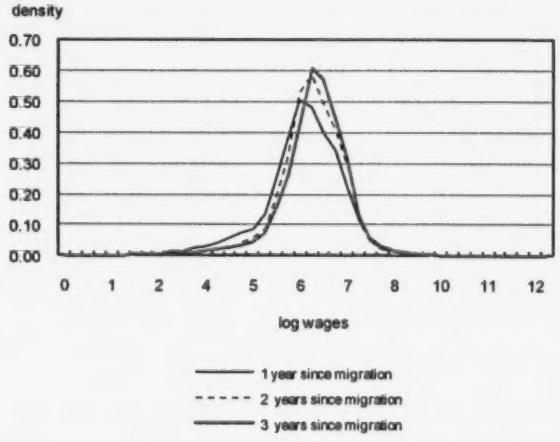
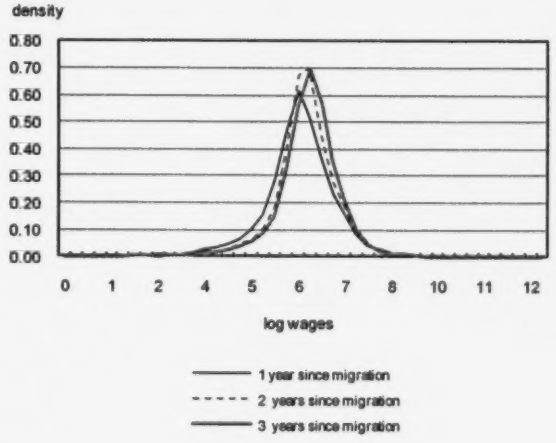


Chart 16
Distribution of log wages of immigrant men in Canada by years since arrival, 2006



Note: The sample consists of immigrant men aged 25 to 54 who immigrated at age 25 or older, working in paid employment.
Sources: Canadian censuses of 1981, 1991, 2001 and 2006 20% files.

Text table 1
Year of arrival and country of residence five years prior to census year - university-educated immigrant men

	Lived in host country in 1996	Lived in host country in 1996	Lived abroad in 1996
	percent	**mean weekly wages**	
Canada			
Year became landed immigrant in Canada			
1997	20.01	1,339	926
1998	13.02	956	948
1999	8.73	984	812
2000	6.05	999	755
	Lived in host country in 1995	Lived in host country in 1995	Lived abroad in 1995
	percent	**mean weekly wages**	
United States			
Year came to live in the United States			
1996	10.40	1,274	1,293
1997	8.71	1,247	1,386
1998	6.13	1,288	1,320
1999	6.48	1,412	1,345

Sources: Canadian Census of 2001 20% file; 2000 U.S. census IPUMS 5% file.

Text table 2
Distribution of education among domestic-born men aged 30 to 39 in 2001 and aged 35 to 44 in 2006 in Canada

Census, 2001	Single category	Group category	Census, 2006	Single category	Group category
	percent			percent	
Less than high school	...	**20.17**	**Less than high school**	...	**14.61**
No degree, diploma or certificate	20.17	...	No degree, diploma or certificate	14.61	...
High school	...	**40.51**	**High school**	...	**41.87**
High school certificate	23.11	...	High school graduation certificate or equivalency certificate	23.86	...
			Other trades certificate or diploma	10.61	...
Trades certificate	17.40	...	Registered apprenticeship certificate or diploma	7.40	...
Non-university post-secondary	...	**20.25**	**Non-university post-secondary**	...	**24.19**
			College, CEGEP or other non-university certificate or diploma from a program of 3 months to less than 1 year	1.84	...
			College, CEGEP or other non-university certificate or diploma from a program of 1 year to 2 years	10.11	...
Non-university certificate	18.58	...	College, CEGEP or other non-university certificate or diploma from a program of more than 2 years	8.80	...
University certificate below bachelor	1.67	...	Certificate or diploma below bachelor	3.44	...
University	...	**19.07**	**University**	...	**19.33**
Bachelor's degree	13.59	...	Bachelor's degree	13.06	...
University certificate above bachelor	1.49	...	University certificate above bachelor	1.57	...
Medicine	0.65	...	Medicine	0.52	...
Master's degree	2.95	...	Master's degree	3.49	...
Doctorate	0.39	...	Doctorate	0.69	...

Note: The sample used in these tabulations represents a 10% random sample of the 20% census sample of non-Aboriginal, Canadian-born men.
Sources: Canadian censuses of 2001 and 2006 20% files.

Text table 3
Distribution of education among domestic-born men aged 30 to 39 in 1980 and aged 40 to 49 in 1990 in the United States

Census, 1980	Single category	Group category	Census, 1990	Single category	Group category
	percent			percent	
Less than high school	...	**16.05**	**Less than high school**	...	**14.33**
Did not complete grade 12	16.05	...	No school completed – 12th grade completed but no diploma	14.33	...
High school	...	**31.49**	**High school**	...	**26.40**
Completed grade 12	31.49	...	High school graduate	26.40	...
Post-secondary	...	**24.31**	**Post-secondary**	...	**28.25**
Began 1st year college - attending or did not finish 4th year of college	24.31	...	Some college, no degree	21.30	...
			Associate degree, occupational program	3.46	...
			Associate degree, academic program	3.49	...
University	...	**28.15**	**University**	...	**31.05**
Completed 4th year of college or more	28.15	...	Bachelor's degree	17.64	...
			Master's degree	8.46	...
			Professional degree	3.25	...
			Doctorate	1.70	...

Note: The sample used in these tabulations represents a 10% random sample of the U.S. census sample of non-Aboriginal, American-born men.
Sources: U.S. censuses of 1980 and 1990 IPUMS 5% files.

Text table 4
Wage regressions

	Canada				United States			
	Men		Women		Men		Women	
	coefficient	standard error	coefficient	standard error	coefficient	standard error	coefficient	standard error
Variables								
Less than high school interacted with								
1980	-0.162 ***	-0.006	-0.200 ***	-0.009	-0.260 ***	-0.005	-0.171 ***	-0.006
1990	-0.289 ***	-0.008	-0.216 ***	-0.010	-0.380 ***	-0.006	-0.200 ***	-0.007
2000	-0.389 ***	-0.010	-0.221 ***	-0.012	-0.399 ***	-0.006	-0.093 ***	-0.008
2005	-0.382 ***	-0.010	-0.238 ***	-0.014	-0.481 ***	-0.007	-0.198 ***	-0.008
High school interacted with								
1980 (reference group)	...	...	...	...	...	...	...	...
1990	-0.106 ***	-0.006	0.000	-0.008	-0.139 ***	-0.004	0.020 ***	-0.005
2000	-0.213 ***	-0.007	-0.028 ***	-0.009	-0.192 ***	-0.004	0.089 ***	-0.005
2005	-0.181 ***	-0.006	0.005	-0.008	-0.254 ***	-0.004	0.057 ***	-0.004
Non-university post-secondary interacted with								
1980	0.063 ***	-0.008	0.159 ***	-0.010	0.068 ***	-0.004	0.119 ***	-0.005
1990	-0.010	-0.008	0.191 ***	-0.009	-0.005	-0.004	0.224 ***	-0.005
2000	-0.066 ***	-0.008	0.213 ***	-0.009	-0.027 ***	-0.004	0.291 ***	-0.004
2005	-0.037 ***	-0.007	0.265 ***	-0.008	-0.068 ***	-0.004	0.267 ***	-0.004
University graduate interacted with								
1980	0.211 ***	-0.008	0.460 ***	-0.012	0.274 ***	-0.004	0.422 ***	-0.006
1990	0.155 ***	-0.008	0.487 ***	-0.010	0.320 ***	-0.004	0.596 ***	-0.005
2000	0.177 ***	-0.008	0.551 ***	-0.009	0.365 ***	-0.004	0.706 ***	-0.005
2005	0.214 ***	-0.008	0.587 ***	-0.009	0.375 ***	-0.004	0.719 ***	-0.004
Less than high school interacted with immigrant and								
1980	-0.336 ***	-0.015	-0.148 ***	-0.016	-0.206 ***	-0.011	-0.001	-0.013
1990	-0.308 ***	-0.016	-0.105 ***	-0.018	-0.183 ***	-0.010	-0.029 **	-0.012
2000	-0.376 ***	-0.024	-0.169 ***	-0.025	-0.088 ***	-0.010	-0.020	-0.012
2005	-0.272 ***	-0.026	-0.103 ***	-0.027	-0.062 ***	-0.017	-0.065 ***	-0.024
High school interacted with immigrant and								
1980	-0.379 ***	-0.013	-0.279 ***	-0.017	-0.314 ***	-0.013	-0.096 ***	-0.014
1990	-0.457 ***	-0.013	-0.269 ***	-0.015	-0.258 ***	-0.011	-0.111 ***	-0.013
2000	-0.446 ***	-0.016	-0.317 ***	-0.018	-0.191 ***	-0.010	-0.155 ***	-0.011
2005	-0.430 ***	-0.014	-0.349 ***	-0.015	-0.216 ***	-0.019	-0.228 ***	-0.024

See notes, footnotes and sources at the end of the table.

Text table 4
Wage regressions (continued)

	Canada				United States			
	Men		Women		Men		Women	
	coefficient	standard error	coefficient	standard error	coefficient	standard error	coefficient	standard error
Variables								
Non-university post-secondary interacted with immigrant and								
1980	-0.362 ***	-0.016	-0.330 ***	-0.022	-0.349 ***	-0.014	-0.157 ***	-0.017
1990	-0.472 ***	-0.018	-0.319 ***	-0.016	-0.330 ***	-0.012	-0.255 ***	-0.015
2000	-0.507 ***	-0.018	-0.478 ***	-0.018	-0.254 ***	-0.011	-0.238 ***	-0.012
2005	-0.517 ***	-0.014	-0.475 ***	-0.014	-0.342 ***	-0.024	-0.340 ***	-0.027
University graduate interacted with immigrant and								
1980	-0.367 ***	-0.015	-0.498 ***	-0.024	-0.318 ***	-0.011	-0.285 ***	-0.016
1990	-0.440 ***	-0.013	-0.517 ***	-0.017	-0.403 ***	-0.010	-0.418 ***	-0.013
2000	-0.507 ***	-0.012	-0.605 ***	-0.014	-0.282 ***	-0.009	-0.370 ***	-0.011
2005	-0.634 ***	-0.011	-0.660 ***	-0.012	-0.351 ***	-0.016	-0.441 ***	-0.022
Age[1] interacted with								
1980	0.010 ***	0.000	-0.002 ***	0.000	0.016 ***	0.000	0.003 ***	0.000
1990	0.015 ***	0.000	0.005 ***	0.000	0.019 ***	0.000	0.007 ***	0.000
2000	0.017 ***	0.000	0.012 ***	0.000	0.016 ***	0.000	0.009 ***	0.000
2005	0.019 ***	0.000	0.015 ***	0.000	0.017 ***	0.000	0.011 ***	0.000
Age interacted with immigrant and								
1980	-0.004 ***	-0.001	0.000	-0.001	-0.007 ***	-0.001	-0.004 ***	-0.001
1990	-0.009 ***	-0.001	-0.006 ***	-0.001	-0.008 ***	-0.001	-0.005 ***	-0.001
2000	-0.018 ***	-0.001	-0.015 ***	-0.001	-0.011 ***	-0.001	-0.010 ***	-0.001
2005	-0.016 ***	-0.001	-0.013 ***	-0.001	-0.011 ***	-0.001	-0.011 ***	-0.002
Age squared	-0.001 ***	0.000	-0.001 ***	0.000	-0.001 ***	0.000	0.000 ***	0.000
Non-official home language	-0.113 ***	-0.007	-0.107 ***	-0.008	-0.092 ***	-0.003	-0.020 ***	-0.004
Speaks English (reference group)	...	...	...	...	...	...	...	...
Speaks French	-0.057 ***	-0.007	-0.045 ***	-0.008	...	...	...	...
Speaks English and French	0.013 ***	-0.005	0.073 ***	-0.005	...	...	...	...
Does not speak English (or French in Canada)	-0.154 ***	-0.015	-0.074 ***	-0.015	-0.172 ***	-0.006	-0.143 ***	-0.007

See notes, footnotes and sources at the end of the table.

Text table 4
Wage regressions (concluded)

	Canada		United States	
	Men	Women	Men	Women
Other variables included				
Source region[2]	Yes	Yes	Yes	Yes
Region of residence dummies	Yes	Yes	Yes	Yes
Diagnostic statistics				
Observations (number)	406,102	353,371	1,050,671	944,428
R-squared	0.130	0.110	0.220	0.160

*** p< 0.01
** p< 0.05
* p< 0.10

1. The age variable is standardized at age 40 which is just above the sample mean.
2. The source region dummies are standardized so that they represent an effect relative to the average across all regions.

Notes: The dependent variable is the log of weekly wages. The sample consists of paid workers aged 25 to 54 with positive weekly wages, living in private households, non-Aboriginal and not in military occupations. The immigrant sample includes only recent immigrants (no more than five years in the country) who were aged 25 or older at arrival. A 10% random sample of domestic-born workers from the Canadian and U.S. censuses was used (but the full sample of the 2005 ACS).

Sources: Canadian censuses of 1981, 1991, 2001 and 2006 20% files; U.S. censuses of 1980, 1990, and 2000 IPUMS 5% files and 2005 American Community Survey 1% file.

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